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TRANSACTIONS

OF

THE CANADIAN INSTITUTE.

VOLUME III., 1891-92.

TORONTO:

PRINTED FOR THE CANADIAN INSTITUTE,

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1893.

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1891-1892.

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TRANSACTIONS

OF

THE CANADIAN INSTITUTE,

SESSION 1891-92.

SPECIAL GENERAL MEETING.

Special General Meeting, 19th June, 1891, the President in the chair, to consider plans for the enlargement of the building, or the acquisition of a new site and other proposals connected with the extension or change of the buildings and work of the Institute.

After discussion of various proposals the following resolution was carried :—That it be an instruction to refer the question of the alterations, or the selection of another site, to the Council to report to the Institute at a future meeting.

SUMMER SESSION AT PENETANGUISHENE.

First Meeting, 25th September, 1891, at 15.30 o'clock, in the Pavilion of "The Penetanguishene," E. A. Meredith, LL.D., in the chair.

Mr. A. F. Hunter, B.A., read a paper on "Military and Naval Exploits on the Nottawasaga during the War of 1812."

Towards the end of the year 1813 the Americans began to make preparations for the re-capture of Michilimackinac, which had been taken from them the year before. A relief expedition left Kingston in February, 1814, for that northern post, and halted on the Nottawasaga River. Here they constructed batteaux for their transportation across Georgian Bay, and a few weeks later a blockhouse was erected near the mouth of the river. This blockhouse was attacked by American boats on August 14th, 1814, and destroyed, as well as the Northwest Company's schooner *Nancy*, which was lying in the river at that place Some extracts from books, now become rare, were given to throw light upon the incidents of that skirmish, besides two accounts from pioneers of the county.

It was stated in answer to enquiries that "Michilimackinac" meant "Great Turtle" and was shortened to "Mackinac" by the French, that

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Gloucester Bay was on the other side of Tiny peninsula from Matchedash Bay, that the whole bay was called Gloucester Bay by Governor Simcoe in 1793, and that the route to Drummond Island was used till 1841.

Mr. A. C. Osborne read a paper on "The Land of the Wyandots."

Mr. O. A. Howland said the reader referred to the Indians offering tobacco to the Chaudiere Falls. It was probably as a propitiation to some presiding spirit, offered to secure a successful journey on the Great River. He had heard from the Indians on the North Shore of Lake Michigan a similar tradition about the cliff called the "Lover's Leap" on Mackinaw Island. The cliff overlooks the Straits of Mackinaw. The island is about midway in what must have seemed to canoemen a "grand traverse." According to the tradition given him, which he believed to be the true one, the Indians used to land and lay their offerings on this natural altar to the good or evil spirit presiding over the spot as thanks for a safe voyage so far and propitiation against the dangers of the remainder of the passage.

Rev. Father Laboureau said the offering of tobacco is not out of date. A practice still exists among many Indians of throwing a bit of tobacco to the "old woman."

Mr. Alan Macdougall read a paper on "The Indians of the Pacific Coast, an Attempt to Define their Artistic Work."

Second Meeting, 25th September, 1891, at 20 o'clock, in the Town Hall, the Mayor in the chair.

The Mayor delivered an address of welcome, to which a reply was made by Dr. Meredith.

Mr. David Boyle read a paper on "The Indian as a Mechanic"

Rev. Father Laboureau read a paper on "The Early History of the the Mission of St. Anne's, Penetanguishene." There was, he said, a naval and military station in Drummond Island at the time of its cession to the United States, and also a considerable number of traders, merchants, and their servants, mostly French Canadians, half-breeds, and Indians. The military and naval post was removed in the fall of 1827 to Penetanguishene. The civilians followed in the spring of the following year, landing at what is now the Reformatory Point. Barracks were then erected, and the civilians, after a year and a half, removed to the present town. The Indians were scattered around at Waubaushene, Coldwater, Beausoleil, Manitoulin, some staying at Penetanguishene. In February, 1832, Bishop Macdonnell, of Kingston, made his first pastoral

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visit, accompanied by Father Crevier, the resident missionary on Sandwich Island, in Detroit River. Then clergymen came occasionally until the arrival of a resident priest. The absence of a regular clergyman was made up for partially by the devoted zeal of a Frenchman named D. Revol, who assembled the people for prayer on every Sunday and Church holidays, instructed them in their faith, and was especially successful with the Indians. He spent his time, money, and all that was best in him in their service. A log church was built in 1835 where the town hall now is. It became too small for the increasing congregation, and a new one was erected and blessed in 1861 by Archdeacon (now Archbishop) Walsh Then in 1871 was commenced the memorial church in memory of the martyred Jesuits, De Brebœuf and his companions. The basement has been used for service since 1890. It is still unfinished. In 1835 the Rev. J. Baptiste Proulx came as resident missionary. He was specially interested in the Indians, and, having obtained another priest in 1837, Father Amable Charest, to reside in Penetang, he went with them to Manitoulin Island. In 1845 he transferred the care of them to the Jesuits, who have had remarkable success with them. Father Laboureau then gave an account of the different missionaries who have since laboured among whites and Indians in Penetang and neighbouring districts.

Mr. A. F. Hunter, B.A., read a paper on "National Characteristics and Migrations of the Hurons, as indicated by their remains in North Simcoe."

The Indian name of Lake Simcoe was *Ouentaron*, meaning "beautiful lake." It was called *Lac aux Claies* or the lake of the hurdles by the French, which became corrupted into *Lac la Clie*, and so called for 150 years after the Huron-French period. It is altogether likely that the hurdles referred to in the name were those found at the Narrows . . . . . The Huron-Indian village of Cahiagua, mentioned by Champlain, was situated three leagues (nine miles) from the Narrows, and not at Orillia as claimed by some writers on the subject. Remains of a Huron village are still to be seen at a place in the Township of North Orillia, corresponding closely with the position of Cahiagua as indicated by Champlain.

Mr. D. B. Read, Q.C., read a paper on "Macbeth, Historical and Dramatic."

Mr. A. C. Osborne presented to the Institute a stone knife and a stake from the "Narrows" at Orillia.

Third Meeting, 26th September, 1891, at 15 o'clock, in the Indian Council House on Christian Island, Dr. Meredith in the chair.

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John Monague addressed the meeting in Indian, which was translated by John Lake, as follows :—

"I was born on the banks of the Nottawa River. The first thing I can remember was seeing ships anchored at the mouth, but I am not positive whether they were sunk there or not. (This statement, uttered incidentally, corroborates that of Mr. Hunter.) I did not travel much when young, only round about my home. I once went up to Sault Ste. Marie. Then I made a trip to Toronto, where I saw people marching round with drums, and wondered what it all meant. The Indians there told me that there was a war or rebellion. When I was in Toronto the Government sent men to tell the Indians that everyone over 21 years was to turn out and help find Mackenzie. A reward of $1,000 was offered to the person who brought in Mackenzie's head. Four or five of us then started out to hunt for him, but we did not know him, and could not have taken him. The Indians told us he had gone over the Big falls; that he had walked to the front in woman's dress, and so we missed him. The Indians were then told to go to a house beyond Holland Landing, towards Barrie, in which there were plenty of weapons left by the cavalry. When we got there the house had been burned down. Afterwards I and my tribe settled in Coldwater and remained there about twenty years. We then went to Beausoleil Island and stayed there about fifteen years. Captain Anderson was the agent then. He told me that he would try to lease a mill we had on the Island to George Copeland for twenty years and that we should go to another island. We then moved to Christian Island and Manitoulin, the greater number went to the latter place. When we were moving Chief Assance was drowned, and he was succeeded by his son, who has been chief ever since. After Anderson, Jarvis came. He always came in a big canoe. After business was over he made us have canoe races, men in one canoe, women in another. He used to steer for the women, who always won. On these occasions his hat would be beautifully decorated with ribbons. Jarvis gave blankets as prizes. I do not know whether they belonged to Jarvis or to the Government. I used to go with Jarvis to Manitoulin as his pilot."

Mr. A. C. Osborne read a paper on "The Flight of the Hurons from Ste. Marie to Christian Island."

The following resolution was carried on motion by Mr. Boyle, seconded by Dr. Ellis :—

"That in the opinion of the Canadian Institute it is desirable that steps should be taken to preserve as far as possible the ruins of the old forts on the Wye and Christian Island, and that with this object in view it would seem proper that the Institute should address the Provincial Government,

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the Councils of Simcoe County, Midland City and Penetanguishene, the Grand Trunk Railway Company and the Indians of Christian Island, asking those bodies to unite for this purpose."

Votes of thanks were passed to the Mayor and Council, to Chief Assance, John Monague, Father Laboureau, and Mr. Walter J. Keating for their efforts in promoting the success of the meetings.

FIRST MEETING.

First Meeting, 7th November, 1891, the President in the chair.

The President delivered his inaugural address: "A Critical Review of the Enterprise of Christopher Columbus." Previous discoveries by the Cabots were sketched, the disastrous and murderous government of the Spaniards in America alluded to, and the motives attributed to Columbus, not altogether unselfish, dealt with. After the address, a photograph in colors of the solar spectrum, thought to be the first ever exhibited in America, was shown.

SECOND MEETING.

Second Meeting, 14th November, 1891, Mr. J. Davies Barnett in the chair.

Donations since the Annual Meeting 68, Exchanges 1731.

A report of the summer work of the Biological Section was read.

The following were elected members:—Alfred Boyd, V. B. Wadsworth, William Ker, M. B. Aylsworth, Henry Wade, T. C. Jackson, Milner Hart, Daniel Clark, M.D., Henry E. Caxton, Thomas M'Crosson, W. J. Keating, A. C. Osborne, A. P. Coleman, Hon. J. B. Robinson.

Mr. W. J. Smith read a paper on "The Formation of Niagara River." He opened his reading with recounting the theories held by Sir Charles Lyell, Mr. Blackwell, Prof. Gilbert, Prof. Scovel, and others, all varying in statement of method, but all agreeing on the one point that the "Gorge," from Lewiston to the Falls, has been due to the action of the waters eroding the rocks backwards. Mr. Smith contends that facts do not substantiate the theory so held in any one particular, and he first takes the ground that Niagara river should not be the only instance in the world where waters in similar positions have eroded their rock bed. In support of his non-erosion theory, he recites parallel instances in a number of well-known falls within the Dominion—coeval in point of time

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with the Niagara. He instances falls on the European and African continents, particularly one described by Livingstone on the Zambesi. The waters of that immense river have fallen into a rock crevice about 60 feet wide, and the full span of the river, over 3,000 feet. For untold ages the waters have beaten the wall rock of that fissure, and erosion has not taken place; yet under such an erosion theory as set up by the scientists the waters should have increased the opening, even under a recession rate of three inches per annum, at least 7,000 feet; in other words it should have formed a similar gorge to the Niagara of that extent. The rock was "Basaltic," therefore much more friable and easier to erode than the limestone rock forming the bed of Niagara river and its gorge. This river was certainly coeval with the Niagara, and, at a recession of one foot per annum, it should have presented a gorge far in excess of the length of the Niagara. He claims the instances in our own country should have presented corroborative evidence of erosion, yet they do not. Speaking of the recent report of the engineers of the New York State Geological Survey of the cliff of the Falls, and its recession, Mr. Smith places it in many peculiar ways. For instance: The report states that the total superficial area of rock which has disappeared between 1842 and 1890 is, at the American Falls, 32,900 feet, or 755-1,000 of an acre, and at the Horseshoe Falls 275,400 superficial feet 6 32-1,000 acres. If, then, such was the case, as the superficial area must be multiplied by the rock, depth or fall of water, 164 feet, and divided by the number of days in the 48 years, there should be a daily loss of rock equal to 190 tons, yet, as he puts it, the vertical face of the rock at the Falls, as well as the rock forming the cascades, presents the same old moss-grown face which it has done each and every day during all time. If the rock eroded, how could the vegetable growth exist on any part thereof? Mr. Smith argues further that Goat island "presents a vertical face of 1,500 feet in length and 100 high on the line of the falls. It is similar in appearance to the rock surrounding and lining the "gorge." Evidently, then, that island was at one time produced across the chasm, and more than likely joined the main rock on the Canadian side. Now let these scientists take either horn of the dilemma. If that island joined the main rock, how did the waters get over the 100 feet high rock barrier to enable the formation of its present appearance? The American falls were open, therefore all waters must have flowed over at that time, the rock island could not have then been eroded. Extend the island even part of the way, and its appearance demands the production, therefore the waters would have flowed around to the west and over our Canadian park, making connection further down the "gorge." In no way could the island be eroded. Mr. Smith describes the formation as due to fracture. He

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enters into many particulars as to the method, treating it on well-known geological lines. He supports his theory by existing evidence. He admits the startling nature of his thesis, in the face of the statements of so many scientists, but he says the evidence of facts will always displace that of theory. The facts in this case are so many that, when studied from his standpoint, conviction must follow. He denies emphatically that there was an "ancient river bed," and brings proof to bear, stating that such an outflow could not be restrained by any gravel and clayey bed as the old course is said to have been. Nothing but a rock barrier could have confined the waters. The theory he said was so radical a change from that which we have been led through so many years to believe as to confound us for the time being. But the question was deserving, from a scientific point of view, of the most careful investigation.

THIRD MEETING.

Third Meeting, 21st November, 1891, the President in the chair.

The President, Secretary, and Dr. Meredith were appointed to represent the Institute at the Prison Reform Conference to be held on the 27th November.

Donations and Exchanges since last meeting, 54.

Daniel Rose, R. A. Donald, Ernest Lefroy, and Dr. G. B. Smith were elected members.

Dr. Kennedy read a paper by the Rev. A. G. Morice on "Déné Roots," the principal portion of which is a vocabulary, showing the equivalents in about 20 dialects of 370 English words and phrases. The object of making this vocabulary is to enable students in other parts of the world, and especially in Eastern Asia, to compare their words with corresponding words in the languages of other tribes, and thus lead to important conclusions as to the affinity of widely separated nations. In a brief introduction the Rev. Father shows the supreme importance of comparative philology in discussing the affinities of races, and outlines some of the characteristics of the languages he is dealing with.

Mr. Macdougall referred to a former paper by Father Morice, in which it was stated that almost all the customs in the book of Leviticus were found among the Indians. From the striking resemblance of the Indians to the Mongolians, it was natural to conclude that the west coast of America had been settled from the eastward. A Japanese man of war had put into the harbor of Esquimalt. The sailors dressed up some of

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the Indians in their own clothing, and it was difficult to distinguish the Indians from the Japanese.

Dr. W. R. Shaw read a paper on the disease called "Peach Yellows." After sketching a history of the disease in the United States and Canada he went on to detail the signs which characterize the disease. He enumerated the preliminary results which he has obtained during the past season in the bacteriological investigation of the disease, and demonstrated that a particular germ has been found which is the probable cause of it. He stated that he would lay before the Institute at some future date the results of inoculations, etc., into healthy vines to find out if the diseases be actually due to the bacillus which he has found. Dr. Shaw's paper was illustrated by the microscope and culture tubes.

Prof. Macallum said that it had been stated to him that probably in six or seven years there would be no peach orchards in Niagara. He hoped that Dr. Shaw would continue to pay attention to the subject, as the results were such as would reward him for his investigations. He suggested that the Biological Section should take up the matter. The Institute should also take action. They should urge the importance of the subject on the legislature, and in view of the great annual loss sustained of about $100,000, should obtain aid in carrying on the investigation. As the whole Dominion was interested in this matter of diseased peaches it should also be brought to the attention of the Dominion Government and stringent measures adopted.

A resolution was passed referring the paper to the Council of the Institute to take necessary steps to bring the subject before the Government and people of the Province and Dominion.

FOURTH MEETING.

Fourth Meeting, 28th November, 1891, the President in the chair.

Donations and Exchanges since last meeting, 44.

Prof. J. G. Hume, and Henry Duggan were elected members.

A paper by Dr. MacNish on "St. Columba or Colum Cille," was read. The paper gives some facts as to the geography and history of the island of Iona, sketches rapidly the life and work of St. Columba, gives some account of his writings, and concludes by a comparison of a number of words and phrases in the Irish and Scottish dialects of the Gaelic language.

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The following resolution was passed on motion by Mr. Clark, seconded by Mr. Morrison :—

That the Secretary be requested to obtain from the City Council the results of the observations taken on lake currents, with a view to consideration thereof and report by the Committee.

FIFTH MEETING.

Fifth Meeting, 5th December, 1891, the President in the chair.

Donations and Exchanges since last meeting, 73.

Mr. F. E. P. Pepler was elected a member.

A resolution was adopted requesting the Vice-President and Secretary to attend the meeting of the Ontario Society of Artists in regard to obtaining the old Upper Canada College buildings from the Ontario Government for art and science purposes.

A paper was read by W. A. Sherwood, A.R.C.A., on "The Spirit of National Art." He lamented the fact that there was so little of this spirit in Canada, and that national art was almost unknown. He made reference to the life labor of Sir Joshua Reynolds, who strove to build up a national art in England. The results of his work may now be seen in the magnificent art in England to-day, which compares favorably with that of any other country. In this democratic country there is no patronage, and all that can be looked for is a broad sympathy with every department of art. This broad sympathy was a more powerful factor in building up a national art than any individual patronage, and he looked forward to the time when it would be heartily extended. The art of any country should reflect the individuality, the customs and the philosophy of the people. The spirit of national art has a patriotic tendency, and the state should assist in fostering it to the utmost. Its object and aim is to develop to the furthest every portion of the community to a higher appreciation of created things, to bring the mind in closer communion with nature, viewing with reverence all created forms and all conditions of social and domestic life. Like its sisters, music and poetry, it strives to touch with a delicate hand the finer sensibilities of nature: like its sterner sister science, to wield no uncertain wand over the grosser prostitution of sacred things; a priestess in the temple of nature truly zealous of her sacred duties, keeping the lights ever burning upon the golden minarets of the altar. The homogeneous condition of the Canadian commonwealth would in time produce an art peculiarly national and superior to that of any other country. In it would be

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combined all the beautiful characteristics of the English, the French, the German and the Italian schools, and it would also have the refining influence of the Japanese art. He looked to the French in Quebec to produce a great Canadian painter. Speaking of the spirit of art in the United States, Mr. Sherwood remarked that there was but little of it there. The wealthier class practically despise American painters and search in the art centres of the old world for the adornments of their homes. Whistler, for instance, is now looked upon as a very eminent painter in England. In Baltimore, his home, where he worked for years, he was neither appreciated nor recognized. Canada, with its lakes, its forests, its glorious scenery, its clear sky and its noble people, should produce a school of art superior to any in the world. He laid great stress on the sacredness of art, and in its refining and elevating influences he placed it on an equal footing with the pulpit and the professor's chair.

Mr. Pursey thought that the best pictures were not exact representations of nature. The artist took the outline from nature and filled it up with the ideal.

Mr. Macdougall referred to pictures that were defective from a lack of scientific knowledge on the part of the artist or a want of accurate observation of nature. Some were defective in their cloud effect, owing to the neglect of the study of meteorology. In a picture of sheepshearing the shearer was represented as shearing with his left hand. A countryman who saw it and had more accurate knowledge of nature than the artist, said the picture was wrong, as the man could not shear the sheep with his left hand.

Mr. Fairclough referred to a painting of Turner's in which the Thames was represented flowing the wrong way.

The President remarked as to religious art that there was none in the world at the present day; the earlier productions of the European painters were inspired by their strong faith. As this faith gradually died out, there was a corresponding decline in religious art. He thought that historical art was not to be looked for in Canada. In paintings of scenery the Canadian artists had done very well. They had produced some charming pictures that were fully equal to those on the other side. He thought that their works were very fairly appreciated, and brought good prices. He held that the present time was not one in which art could attain a high level. It was too practical. It was a photographic age. People required an actual representation of nature. It was not always desirable to have an actual representation of nature. As to the pictures placed before children in the schools he gave reasons why

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perfect pictures should not be placed before them. He thought that they could not comprehend a finished and perfect picture and that it would be better to give them something simple.

SIXTH MEETING

Sixth Meeting, 12th December, 1891, the President in the chair.

Donations and exchanges since last meeting, 117.

Mr. J. A. Fowler was elected a member.

A committee was appointed to co-operate with the committee of the Ontario Society of Artists in their endeavours to obtain some portion of the Upper Canada College buildings for art and science purposes.

The Committee on Lake Currents appointed last session was continued, with power to add to their number.

Mr. A. F. Chamberlain, M.A., late of Toronto, now of Clark University, Worcester, Mass., was appointed to represent the Canadian Institute at the meeting of the American Folk-Lore Society, which will be held at Washington on the 29th and 30th December inst.

Mr. W. A. Douglass, B.A., read a paper on "The Finances of the American Civil War."

SEVENTH MEETING.

Seventh Meeting, 19th December, 1891, the President in the chair.

Donations and exchanges since last meeting, 50.

Messrs. Samuel McAllister, C. C. James, and H. R. Cockin were elected members.

The following resolution, sent up by the Historical section :—"That the members of this section consider that the setting apart and proper maintenance of a portion of the public domain as a national park would much conduce to the fostering of patriotic feeling as well as be a means of increasing interest in Canada abroad, and therefore resolve that the Institute be requested to memorialize the Dominion and Local Governments to the end that such action may be taken as will result in this object," was referred to the Council.

Mr. Levi J. Clark read a paper on "Testing the New Water Pipe," in which he briefly described the construction and laying of the pipe, and its history since it came into use. The method of ascertaining the amount

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of the leakage was minutely described, and the conclusion drawn by him was that from 84 to 140 gallons per minute of bay water was finding its way into our water supply. The quantity varies with the location, being greater the nearer the pumping station is approached. He illustrated his paper by drawings on the blackboard, and referred to several scientific truths relating to the flow of water in pipes, which were exemplified in the course of the investigations. He thinks that the only leak of any consequence has now been discovered at the crib at Hanlan's Point, and that there will be no difficulty in stopping it, when the long-standing charge of our city water being polluted by bay water or sewage may be wiped from the slate.

EIGHTH MEETING.

Eighth Meeting, 9th January, 1892, the President in the chair.

Donations and exchanges since last meeting, 289.

The Rev. Philip Tocque, A.M., read a paper on "The Aborigines or Bœothicks of Baccalaos."

The report of Mr. A. F. Chamberlain, delegate from the Canadian Institute to the annual meeting of the American Folk-Lore Society, held in the city of Washington, December 29th and 30th, 1891, was read. It stated that the meeting was very successful, each day's attendance being large and appreciative. The Society ended its third annual gathering with the confidence that the study of folk-lore in America was now being carried on in true scientific spirit, and the fields of investigation, hitherto almost untouched, bid fair before long to yield rich harvests. Seventeen papers were read, dealing largely with the lore of the aborigines, although the study of the folk-lore of the European immigrants was duly represented. Due recognition of the Canadian members of the society was made in the election of Horatio Hale, of Clinton, Ont., and James Deans, of Victoria, B.C., as members of the Council. It was gratifying to know that not only at the meeting of the Folk-Lore Society, but also at those of the Modern Language Association of America, the American Dialect Society, the American Historical Society, and the Society of Church History, all of which met in Washington contemporaneously, the programmes show that Canada was well represented in the papers which were read.

NINTH MEETING.

Ninth Meeting, 16th January, 1892, the President in the chair.

Donations and Exchanges since last meeting, 50.

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On a communication from Dr. Rosebrugh the following resolution was adopted :—

"That we heartily approve of the ten resolutions adopted by the Provincial Prison Reform Conference held in Toronto, November 27th, 1891; that the same are commended to the favourable consideration of our legislators, both Dominion and Provincial, and that copies of this resolution be forwarded to the Hon. Sir John Thompson, Minister of Justice, and to the Hon. Oliver Mowat, Attorney-General, Province of Ontario, and to the Press for publication."

Mr. George E. Atkinson was elected a member.

Mr. William Houston, M.A., read a paper on "Economic Science for Canadian Students."

Mr. Harvey had listened to Mr. Houston, as he always had done, with the greatest pleasure. On nearly all the points he agreed with him. There were a few, however, on which he differed. He did not think that economic science was one of locality. In his opinion economic science did not belong to a small community, but to the brotherhood of mankind at large. But was there such a science as political economy? There was no more a science of political economy than there was of literature. There could be no exact science of either. Behind all this was the question, What was truth? The idea of what was truth was continually changing except in the mathematics. When you come to enquire what was perfectly just between man and man, there was constant change. As to the method of investigation, the inductive method had been the most successful for the past 300 years. He did not think that we should neglect the deductive method. The former was the best when we were young, the latter when we were old.

TENTH MEETING.

Tenth Meeting, 23rd January, 1892, the President in the chair.

Donations and Exchanges since last meeting, 66.

A paper by Mr. Edward Jack on "The Abenakis of the St. John River," was read by Mr. Macdougall. The paper deals with the history and legends of the tribe, gathered during many years of intercourse with them. They originally inhabited what is now Maine, New Hampshire, New Brunswick, and even a portion of Nova Scotia; and were subdivided into several divisions. The principal ones took their characteristic names from the districts they lived in; such as Kanibesinnoaks, "those

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who lived near the lakes"; Sokowakiakio, "men of the south"; Nurhantsuaks, "those who travel by water." The remains of the tribes called "Muskrats" and "Etemankiaks," now called Malecites, occupy the greater part of New Brunswick. The early connection of the tribe with the English is found in their word for king, which is Kinzames, evidently intended for King James of England. A somewhat similar name is used for our Queen. The Abenakis say they came from the West, and originally worshipped the sun and moon. The first missionaries to visit them were the Jesuits, who came among them in 1611. Numerous legends are given, which are similar to some of those of our Western Indian. On relating the story of the beaver, muskrat, and squirrel to a Chippewah in Wisconsin, the latter knew it well. The story is that the muskrat lent the beaver his tail, which the latter refused to return; the Chippewah added to this, yes, and he has been whining for it ever since.

The President read some notes in which he gave further particulars respecting the Abenakis. In 1641 we first get the name of the Abnaquiois. In 1643 we find in the "Relations des Jesuites" that the Abnaquiois had no dealings with any but the English. 1644-1646, some Abnaquiois came to Quebec and were baptized by Father Dreuilletes. 1647. There is a whole chapter in "Les Relations" respecting them. Father Dreuilletes studied their language, and said it had no little similarity to the Algonquin.

ELEVENTH MEETING.

Eleventh Meeting, 30th January, 1892, the President in the chair.

Donations and exchanges since last meeting, 53.

Mr. Alexander MacInnes was elected a member.

Messrs. Bain and Macdougall were appointed delegates to the Industrial Exhibition Association.

Communications were read from the Manchester Geographical Society announcing the death of the President, the Duke of Devonshire; from the Royal Society of Canada respecting their meeting in May; and from the Committee appointed by the Spanish Government on the celebration of the fourth centenary of the Discovery of America inviting the co-operation of the Institute.

The President laid on the table his paper on "The Position of the French Race in Canada," read by him at the Congress of Roman Philo-

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logy held in Montpelier, and published in *La Revue des Langues Romanes* with a note by Dr. Bourinot on French Canadian Biography.

Mr. Henry Spencer Howell read a paper on "The Volcano of Kilauea and the Hawaiian Islands."

The Hawaiian Islands are situated in the North Pacific ocean, lying between the 18th and 23rd parallels of north latitude, and from 155° to 161° west longitude; and are, therefore, just within the tropics. There are eight principal islands, Hawaii, with an area of 4,210 square miles; Maui, 760; Oahu, 600; Kauai, 590; Molokai, 270; Lanai, 150; Niihau, 97; and Kahoolawe, 63. The last named is uninhabited; and there are four small islets, one of which (Molokini) is an extinct volcano with one side of the crater open to the sea—showing either subsidence or denudation. No finer climate can be found in any part of the world; it is as salubrious as that of Madeira, and its evenness is the delight of those who come here for pleasure or to benefit health. The tropical heat is so tempered by the sea breezes—the soft trade winds of the north—that the greatest degree of heat at Honolulu during the past twelve years was 90° in the shade, while the lowest was 54°; the average being 75°. The daily range of the thermometer is 12°. Of course it is hot in the sun at noon; but the mornings and the evenings are delightful. Sugar is the chief product; and rice, tobacco, coffee, bananas, and pineapples are grown in great quantities; all sorts of citrous fruits abound, and the cocoa palm grows to perfection. Most people are under the impression that these islands were discovered by Captain Cook, and many books chronicle the error—for an error it is; they were discovered by Gaetano, an early Spanish navigator, in the year 1542, and the chart drawn by Mendana in 1567 gives a very nearly accurate position of the group—absolutely correct in regard to Kauai. There is a tradition among the natives that two vessels from Spain were wrecked on the large island about 1527, in the reign of Kealiiokaloa, a king of Hawaii. Captain Cook, on his second visit, landed at Kealakekua Bay: on his former visit Cook was looked upon as a god—the long-lost "Lono" of the Hawaiian Trinity—and he was treated with the greatest respect; the natives say that he allowed himself to be worshipped, and accepted sacrifices as a deity; but in their last visit, February, 1779, the Englishmen seem to have acted like pirates, for they over-ran the heiaus (sacred temples), broke the tabus (religious laws), demanded the best of everything in the way of fresh meat and fruits, and the sailors of the Resolution and Discovery took the greatest liberties with the natives. Then began a series of petty quarrels between the ships' officers and the chiefs, ending in the death of several native chiefs and the luckless circumnavigator, whose name is revered in England and

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the colonies, but not in these islands, for overweening confidence, carelessness, and vanity are not considered by the Hawaiians as attributes of a commander. The early history of the people of Hawaii and the other islands is unknown ; the place whence they originally came, the date of their first appearance here, and the primary source of their religion, are mysteries that will likely remain unsolved forever. Taken into consideration that their traditions have been handed down verbally from father to son and from chief to chief—or chiefess—it is remarkable that they have preserved so much of the history of their ancestors ; from the year 1095 (approximate) to the present day there has been an unbroken line of sovereigns of Hawaii. During the three centuries preceding the "Confederation" the history of these islands is one long story of romance, warfare, and religion ; a story of a noble race, of brave men, and gentle, loving women—a nation-story much the same as it is, was, and ever will be, all the world over ; with men of all creeds and colours, two great factors influence their lives for better or for worse—ambition and affection. Although the Hawaiians never practised the horrible habit, cannibalism was common among a band of savages who came from one of the South Sea Islands and established themselves for a time in the mountain districts of Kauai and on the northern shore of Oahu. But they were not permitted to stay long there, for the natives, finding out that they were man-eaters, made war upon them and drove the foreigners from island to island ; till finally the "consumers of home production" were forced to set sail for the place from which they came—the unknown land. Thus came and went the last of the cannibals. The religion of the Hawaiians was a system of idolatry based upon certain meles, or song stories, which had been handed down from generation to generation, and preserved with integrity by the priests, who met at the heiaus and recited —the older to the younger—the "articles of belief," the traditions of Church and State. But, says a recent writer, "How did the Hawaiian priesthood become possessed of the story of the Hebrew Genesis ?" In 1794 Kamehameha, chief of Hawaii, succeeded in conquering the entire archipelago, and it has been a "kingdom" ever since. The present queen, Liliuokalani, is the elder sister of the late king, Kalakaua, and the heir to the throne is the Princess Kaiulani-Lunalilo-Kalaninuiahilapalapa. The population at the time of Cook's visit was about 400,000 ; now it is only 95,000. The Hawaiian Islands are of volcanic origin ; on every island are vestiges of these phenomena, and extinct craters are scattered over the surface, differing in size from the giant "Haleakala"—the Palace of the Sun—on the island of Maui, to the "Punch-bowl" in the city of Honolulu. Of extinct craters Haleakala is doubtless the largest in the world ; it is 10,032 feet high, 23 miles in diameter, and nearly eighty miles

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in circumference! This monster volcano has not been active within the memory of man. The summit is crowned with immense walls of scoriaceous lava and basalt, and there are two discharge ways, a mile and a half wide, which pass between rock walls over 2,000 feet in height. The interior is a large cinder field, containing cones 400 to 900 feet high. Mauna Kea (the "White Mountain"), on the island of Hawaii, is the highest point of land in the group; it is 13,805 feet above the sea. This has been an extinct volcano for centuries, but its ignipotent sister Mauna Loa (the "Long Mountain"), 20 miles to the south, has been very active within the last few years. Mauna Loa is 13,650 feet in height; and on a "shoulder," 20 miles to the east, is the active crater of Hale-mau-mau (the "House of Everlasting Fire"), or, as it is usually called, the volcano of Kilauea. There have been many eruptions of Mauna Loa from 1832 to 1887, but perhaps the most destructive was in 1868—the famous "mud-flow." The earthquake destroyed nearly all the villages in the district; the tidal wave, 20 feet high, washed along the shore, doing immense damage, and the flow from the mountain carried away cattle, horses, sheep, and human beings; 81 lives were lost. In 1881 there was another great eruption, and the fiery lava travelled for 30 miles (in nine months), and stopped within three-quarters of a mile of the town of Hilo, a place of about 6,000 inhabitants! Property was very cheap there at that time. During the eruptions of January, 1887, "618 earthquake shocks were counted" in two days. Prof. Dana, in his "Characteristics of Volcanoes," tells us that "the origin of Volcanic heat, the source of lava columns beneath the volcano, the cause of the ascensive force in the lava column, are subjects on which science has various opinions and no positive knowledge." Volcanoes may be "explosive," either when water gains access to the interior (*i.e.*, liquid lava) and generates enormous projectile force, or they may be subordinate or "lateral," coming from the side of a mountain; there may be earthquakes in connection with the eruptions or the vibrations may scarcely be felt. Volcanoes eject lava (melted rock); projectile discharges which become cinders, ashes, and, if very large, they are called "lava bombs"; and gaseous discharges. But the pictures which show flames issuing from a crater are misrepresentations; the fiery glow is the reflection on the vapour from the liquid lava within the crater. Around the Hawaiian volcanoes are large deposits of sulphur; the natives place carved boxes, trays, etc., beside the fissures until they become encrusted a bright yellow.

After giving numerous quotations from authorities on the subject of volcanic phenomena, Mr. Howell described his visit to the crater of Kilauea, and his descent into the crater of Hale-mau-mau, in October of

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last year. The latter crater is very active; it is half a mile in diameter, and 250 feet deep from the "floor" of Kilauea, and in this awful fiery chasm the waves of liquid lava are continually moving—irresistibly drawn to the centre, the seething whirlpool, where masses of lava are fused like blocks of sealing wax, and where great fountains of brilliant lava are hurled high up in the air! Kilauea is 300 miles from Honolulu, and the volcano is 4,000 feet above the sea-level. It took the travellers over an hour to climb the lava field of Kilauea, and nearly two hours were occupied in descending and returning within the crater of Hale-mau-mau.

TWELFTH MEETING.

Twelfth Meeting, 6th February, 1892, the President in the chair.

Donations and Exchanges since last meeting, 42.

The President laid on the table a list of contributions to Geology and Mineralogy, published in the Journal and Proceedings of the Canadian Institute, and prepared for the Committee on the Bibliography of Geology appointed by the International Congress of Geologists.

The following resolution was passed, on motion by Professor Macallum seconded by Dr. Shaw :—

"Whereas the attention of the Institute has been directed to the great danger threatening the orchards, and peach orchards in particular, in this province from the disease known as the 'yellows,' which has in former periods within the last century devastated large tracts of orchard lands in the neighbouring portions of the United States;

"And whereas scientific investigation has been partially made, and is now being carried on by some learned members of the said Institute into the causes of the said disease, with a view to find out some remedy and the best means of applying the same;

"And whereas the Legislature of the Province of Ontario passed an Act in 1881, which was amended in 1884, the special sections of which are :—

"Revised Statutes of Ontario, 1887—under noxious weeds and diseases affecting fruit trees :—

"Sect. 2, div. 3.—To cut down and burn any peach, nectarine or other trees on the land infected with the disease known as the 'yellows,' and to destroy all the fruit of the trees so affected.

"Sect. 3, div. 2.—Such council may and upon a petition of 50 or more ratepayers shall appoint at least one inspector to enforce the provisions

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of this Act in the municipality and fix the amount of remuneration, fees or charges he is to receive for the performance of his duties; and in case a vacancy shall occur in the office of inspector it shall be the duty of the council to fill the vacancy forthwith.

"Sect. 8.—If written complaint be made to the inspector that yellows or black-knot exist within the municipality, in any locality described in such complaint, with reasonable certainty, he shall proceed to examine the fruit trees in such locality and if satisfied of the presence of either disease he shall immediately give notice in writing to the owner or occupant of the land whereon the affected trees are growing, requiring him within five days from the receipt of the notice to deal with such trees in the manner provided by Sect. 2 of this Act.

"Sect. 10.—Deals with the penalties, which are not under $5 nor more than $20 for not removing such trees, and for selling fruit so affected also same penalty.

it is the opinion of the Institute that the said Legislation is more permissive than compulsory and not sufficiently stringent to effectually stamp out the disease. Therefore, be it

"Resolved, that the attention of the Government of the Province be drawn to this important question, and that it be respectfully requested to give its most favourable consideration to the introduction of such more stringent legislation as shall enforce the destruction of infected trees, prevent the sale of diseased fruit, and regulate the appointment and duties of inspectors in such manner and with such powers as shall enable them to enter all orchards in their district at all times to enforce in full the provisions of the said legislation, and that copies of this resolution be sent to the Hon. the Attorney-General, and to the Hon. Minister of Agriculture."

Mr. J. C. Hamilton, LL.B., read a paper on "The Great Centre—an Astronomical Study."

Mr. Lumsden thought that if there was a star that, on account of its size, would be likely to be the centre of the universe that star would be Arcturus. It was stated to be the largest star we have any knowledge of. Its diameter would reach from the sun to the earth.

The President said the theory of a central star was very fascinating, but he had never read or heard of anything in Astronomy to confirm the idea.

THIRTEENTH MEETING.

Thirteenth Meeting, 13th February, 1892, the President in the chair.

Donations and Exchanges since last meeting, 54.

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The death of Dr. T. Sterry Hunt, the eminent chemist and geologist, and author of several valuable works, was announced. Dr. Hunt had been for a long time connected with the Canadian Institute as a life member, and a copy of his recent work on "Systematic Mineralogy based on a Natural classification" had just been received from him as a present to the Institute.

Dr. George Kennedy read a paper by Prof. Campbell, Montreal, on "Siberian Inscriptions." It was not only a review of the volume of inscriptions from the Yenesei published by the Arehæological Society of Finland, but an actual attempt to decipher these hitherto unread relics of ancient literature by means of more accurate copies obtained by the writer from St. Petersburgh. The language they yield is Japanese, and it is the contention of Prof. Campbell that the authors of the inscriptions, mounds, and other remains of old civilization found throughout Southern Siberia were the Japanese in north-eastward migration from India, whence some of their own historians have derived them. The samples of inscriptions contained in the paper, which was illustrated by fac-simile drawings of the documents, plainly betray their origin as the work of Buddhist priests, and are dated from the time of Gautama's death. The oldest so far belongs to the fifth century, A.D., and is the memorial of Sekata, the Sagoteno of Japanese, and the Shekingtang, or Sheketang, of Chinese historians. The inscriptions submitted are but specimens of a large number to be published, along with Indian, Buddhist, and American mound-builder relics, in Prof. Campbell's forthcoming work, "The Eastern Track of the Hittites." Should his readings stand the test of criticism the light they will shed upon the history of the Khitan dynasty of China and of the peopling of north-eastern Asia and the western coast of America will open up a record of novel and absorbing interest.

Mr. Harvey said that the true opinion according to the best authorities was that the Etruscan people were subject to the Kabyle race. The Kabyles had ruled over Etruria for a couple of centuries. The language of the Etruscan inscriptions was taken from the Kabyle country. Prof. Campbell would have to reckon with these authorities. The Accadians were Mongols and had attained a very high civilization.

FOURTEENTH MEETING.

Fourteenth Meeting, 20th February, 1892, the President in the chair.

Donations and Exchanges since last meeting, 92.

The following resolution was adopted :—

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"The Canadian Institute has received the intimation of the death of Dr. T. Sterry Hunt, F.R.S. &c., a life member of the Institute, with profound regret. In the long period in which Dr. Hunt was connected with the Institute, he contributed many valuable original contributions to its publications. The Institute, in common with all other scientific corporations, recognises the immense advantages derived from the assiduous labors and investigations in the fields of geology and mineralogy, which have rendered the name of Dr. Hunt famous in both hemispheres, and the Institute tenders to his sorrowing relatives the most respectful expression of sympathy in their present bereavement."

It was resolved on motion by Mr. Macdougall, seconded by Prof. Macallum:—

"That a circular be printed and sent to the societies exchanging proceedings with us, mentioning the volumes of their publications we require to complete our sets, and requesting them to aid us by supplying missing numbers; also asking them who thus favor us to state which of our publications they may not have in their libraries, and promising to send them as far as we are able; that the Librarian be asked to report to the Council a list of those societies to whom this circular should be addressed, and the numbers of their proceedings wanting on our shelves."

Mr. Boyle presented the Annual Archæological Report.

Dr. Sandford Fleming read a paper on "Electoral Representation and the Rectification of Parliament."

At the close of the paper the President read the following:—

"A friend of the Institute, deeply impressed with the great national importance of the subject dealt with in Mr. Fleming's communication, has offered (without wishing his name to be known) to place at the disposal of the council the sum of $1,000 to aid in obtaining a satisfactory solution of the problem referred to. The willing donor suggests that the sum (in whole or in part) may be awarded by the Institute for the best workable measure which, if made law, would give the whole Canadian people equal representation in Parliament, and each elector due weight in the Government through Parliament."

Prof. Ashley made various objections to the plan proposed by Dr. Fleming. With all its defects party government does furnish a tolerably fair basis for government Under any other system it would be difficult to secure the adherence of sufficient numbers to carry out measures of importance. The plan of minority representation proposed by Hare was altogether a curiosity and was outside the range of practical politics

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He was present at a meeting in Oxford when the matter was taken up. It was universally pronounced chimerical.

Mr. Douglass, while aware of many difficulties in the carrying out of a system of minority representation was strongly in sympathy with the paper to-night. He wished for further information on the subject.

Mr. Meek urged the advantages of Party Government. With all its faults and shortcomings it is after all (taking into consideration the true objects of all governments), the best system of government the world has had any experience of. Party government is not an invention or creation. It is a natural growth, a natural development. Theorists may propound theories of government which appear more symmetrical, but not having sprung spontaneously from the people, they lack vitality. A tree may be constructed which will appear more artistic in form, and more beautiful in outline than a living tree, but the one is dead, and the other has life. We should not seek to destroy representative party government as it now exists, but to improve it, and remove its real defects. Wherever we find free institutions, wherever we find political liberty, there we find party government in some form. Wherever we find despotism, wherever political liberty is suppressed, party government does not exist. They have no political parties in Russia or Turkey. There is no political life in those countries. Our present methods of representatative government are modern, but party government existed in the cities of ancient Greece. The moment a city acquired free institutions, party government naturally and necessarily came into existence As soon as free institutions were done away with, party government ceased. The same thing happened in Rome. While Rome retained a real republican government, different parties contended with each other for the supreme power, and Rome was aggressive, and progressive. When imperial military authority became established, party government ceased, party strife ceased, and progress and civilization became stagnant. Our aim should be to improve, not to destroy. The contention of party leaders is not so much energy and talent wasted. Their struggles prevent political stagnation. They educate the people. They are the life of free institutions. Minorities are not without representation, they are represented by the opposition. All parties necessarily and naturally consolidate into two, representing the ins and outs. Party government and representative government, as we now have them, have many defects which can be reformed and corrected. Our senate might be reconstructed. Our voters' lists might be simplified. The limits of the constituencies might be settled or adjusted so as to prevent any politica party from altering them to suit its own purposes. But, the greatest of

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all improvements must be brought about by educating the voters to cast their ballots, not blindly in favour of the political party to which they may have become attached, but rather in favour of the best men, and the best measures. In other words intelligence and patriotism should be cultivated. Then as to the offer of "a friend of the Institute, to place at the disposal of the council the sum of $1,000, to be awarded by the Institute for the best workable measure to give equal representation in parliament to the whole Canadian people, and each elector due weight in the government through parliament," I would say it seems to me that "equal representation of the whole Canadian people in parliament" is not the most important thing to be attained. Equal representation means that the most ignorant, prejudiced, superstitious and vicious in the community would have the same voice and an equal right in choosing representatives that the most educated, intelligent, enlightened and moral person would possess. The object of government should be rather to prevent the ignorant, the superstitious, the vicious, the prejudiced and the immoral elements from having equal weight and equal influence. All classes, all persons, all societies, all beliefs and all interests should not be represented. The objects of government are to give the greatest power and influence to the most intelligent, the most progressive, the most industrious, the most enterprising and the best elements in the community. A good government is one which not only preserves order in the community but which develops, promotes and stimulates industry, invention, progress, intelligence—in short, a higher civilization. What would or might call for useful essays and treatises would be a prize offered, say for the best essay or treatise on "improvements in representative parliamentary government," or, suggesting "practical improvements in our present system of party government," or, "treaties showing the defects and imperfections in our present systems of representative parliamentary party government," and, "suggesting remedies for the evils pointed out, and such amendments and improvements as the system is capable of."

The following resolution was then adopted by the meeting :—

"That the best thanks of the Institute be tendered to the friend, who does not wish his name to be known for his generous offer, in contributing the sum of $1,000 to aid in obtaining a satisfactory solution of the problem referred to in Dr. Sandford Fleming's paper ; that the Institute accepts the offer and empowers the council to take the necessary steps to obtain essays or treatises, and award the premium to the best workable measure which, if made law, would give the whole Canadian people equal representation in the Government through Parliament, and each elector due weight in the Government through Parliament."

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FIFTEENTH MEETING.

Fifteenth Meeting, 27th February, 1892, the President in the chair.

Donations and Exchanges since last meeting, 53.

H. H. Langton, B.A., and Alexander Primrose, M.B., were elected members.

A communication was read from the secretary of the Lincoln's Farmers' Institute, enclosing a copy of a resolution adopted by that body at its meeting in Niagara on the 23rd instant, respecting diseases of fruit trees. After referring to a resolution adopted by the Canadian Institute on the subject of the inefficiency of the present law regarding the diseases of fruit trees, and stating that the general principle of such resolution appears to be in accord with the views of the meeting, it was resolved that a committee of three fruit-growers of the County of Lincoln be appointed to co-operate with a committee of the Canadian Institute for the purpose of drafting such amendments as will make the working of the present law more effective, and in urging the Legislature to take action in this matter at its present session. The committe is composed of James Sheppard, of Queenston; Lucas Woolverton, of Grimsby, and Roland W. Gregory, of St. Catharines.

Capt. Ernest Cruikshank read a paper on "Early Traders and Trade Routes in Ontario and the West." The paper began by a reference to the fact that from 1763 to 1816 the trade not only of Western Canada but of the entire American North-West, including the present States of Illinois, Iowa, Wisconsin, and Minnesota, was conducted by British merchants from Montreal. The French trading posts were enumerated, and the extent of their commerce with the Indians was briefly sketched as it existed about the year 1754, just previous to the outbreak of the war which terminated in the conquest of Canada by the English. The old canoe routes from Montreal to the upper lakes, from Lake Erie to the Ohio and the Wabash, from Lake Michigan to the Illinois and Mississippi, and from Lake Superior to the Canadian North-West were next described, as well as the distribution and numbers of the Indian tribes living in the vicinity of those rivers, and the condition of French settlements in the West at the date of the conquest. The beginning of British commerce was traced. Alexander Henry was selected as a type of these early traders. A summary was given of his travels from 1761 to 1776, and of an unsuccessful attempt to work the copper mines of Lake Superior in 1770 and 1771. Notice was taken of the explorations of Carver, Rogers, and others in the direction of the Mississippi, and of the success of the Frobishers and their associates in penetrating from Lake

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Superior to Lake Winnipeg and the Saskatchewan valley, and discovering trading stations unknown to the French. The trade of Mackinac, Detroit, and Niagara, and other stations at the beginning of the American revolution, the character of the traders and their relations with the Indians, were next considered in the light of unpublished documents, from which copious quotations were made. The effects of the war were instanced, and a general review taken of the state of the Western trade during this period. Some account was then given of the variety of goods required for the business and the value of the returns, and in conclusion the writer advocated the preparation of a historical map of Ontario and the Canadian North-West.

SIXTEENTH MEETING.

Sixteenth Meeting, 5th March, 1892, the President in the chair.

Donations and Exchanges since last meeting, 62.

Prof. Macallum, J. B. Williams, and J. G. Ridout were named to meet the Minister of Agriculture with the deputation from Lincoln and Niagara on the diseases of fruit trees.

A communication was read from the Imperial Russian Society of Geography announcing the death of the President His Imperial Highness the Grand Duke Constantine.

C. G. Horetzky was elected a member.

Mr. W. D. Stark read a paper on "The History of Greenland and Iceland," giving a short description of the coasts of Greenland and Iceland, noting some facts concerning the antiquity of the islanders. Their manners, habits, and modes of livelihood were touched upon, including some account of the animals useful to the inhabitants of those desolate regions.

The President, Mr. Arthur Harvey, then read "Rutherford's Narrative —An Episode in the Pontiac War, 1763—an unpublished manuscript with introductory notes by Mr. Harvey." This graphic and interesting narrative of the capture and enslavement of Lieut. Rutherford, an officer of the "Black Watch," by the Indians of Detroit in 1763 was presented by the narrator's grandson, Colonel T. W. Rutherford, of the Madras Staff Corps, late commandant at Delhi, India, to Mr. Thomas Hodgins, to be used as he saw fit. Mr. Hodgins presented it to the Institute, for which a vote of thanks was tendered to him.

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SEVENTEENTH MEETING.

Seventeenth Meeting, 12th March, 1892, the President in the chair.

Donations and Exchanges since last meeting, 53.

The following were elected members :—Prof. Ashley, R. W. Spence, Lancelot Middleton, C.E., and James T. Locke.

The President gave a report of the interview of the deputation on "Peach Yellows" with the Minister of Agriculture.

The following resolution was adopted :—

"1. That special investigations into the cause of the disease known as 'Peach Yellows' have been made by Dr. W. R. Shaw, a member of this Institute.

"2. That a committee of the Institute has waited upon the Provincial Government, with whom appeared also representatives of the Lincoln Farmers' Institute, the Niagara District Fruit Growers' Association, and of the Ontario Fruit Growers' Association.

"3. That this deputation asked for amendments in the existing laws on the subject, and had a very favorable reception.

"4. But that one cause of infection appears to be the introduction of young trees from the United States, grown from 'pips' from infected fruit, and that such young trees, if they come to maturity so as to bear fruit for a year or two, must in the end succumb to the disease and be the means of contagion to other orchards.

"5. That the Institute therefore prays for the enactment of a law to prevent, under proper regulations (to be made by the Governor-General in Council), the importation of any peach trees or other young fruit trees unless a clean bill of health accompany, to certify that no disease exists in the districts from which such young trees come, with a proper guarantee that no disease is inherent in such young stock, in the same way as enacted by the State of California and other places interested in maintaining the integrity of their orchards.

"6. That the Secretary be instructed to send a copy of this resolution to the Department of Agriculture at Ottawa, with copies of Dr. Shaw's paper.'

Mr. H. Rushton Fairclough, M.A., read a paper on "Lieut.-Col. Coffin and his private correspondence during the rebellion of 1837." He pointed out that the subject of his paper (Wm. Foster Coffin) was the son of a major in H. M. 15th Regiment of Infantry, and grandson of a distinguished U. E. Loyalist, to whom General Sir Guy Carleton attributed much of

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the credit of saving Quebec when assaulted by Arnold and Montgomery. After giving a short account of the Colonel's movements until 1873, when the Department of the Interior was organized, and he (the Colonel) was promoted to the position of Commissioner of Ordnance and Admiralty Lands, which he held up to the time of his death, in 1878, the paper enumerated the important special offices to which he had been appointed. The correspondence to which Mr. Fairclough called attention covers a period of over six years (1834-40). The letters, twenty-six in all, were written to Colonel Coffin's cousin, Mrs. Grant, afterwards Baroness de Longueuil, and her daughter, now Mrs. J. A. Allen, of Alvington, Kingston, for some years the residence of the Governors-General of Canada. Besides the family and social gossip given in the letters, there is a great deal that must be interesting to Canadians in general, and it is chiefly the writer's free-spoken comments on the exciting political events of the day that Mr. Fairclough brought before the Institute. The first letter in the packet gives a most vivid description of the burning of the Chateau de St. Louis at Quebec on January 23rd, 1834. This castle had been used as the residence of the Governors of Canada for upwards of 150 years. It was never rebuilt. The characteristics of the commissioners appointed in 1835 by Lord Melbourne are humourously described. The Earl of Gosford, Sir Charles Grey, and Sir George Gibbs were known as the three G.'s, gander, goose, and gosling. The conflict in Upper Canada between "His Jockeyship" Sir F. B. Head and the Assembly, the deadlock in 1836 in Lower Canadian politics, the party dissensions of the day, and the racial character of the strife in Quebec, are dwelt upon at length by Colonel Coffin. The earlier incidents of the civil war—the repulse of the troops at St. Denis, Wetherell's victory at St. Charles, and the brutal murder of Lieutenant Weir are all recorded, but what is most worthy of publication is the remarkably vivid description given by the writer as an eye-witness of the battle of St. Eustache. Colonel Coffin characterizes, in a most pointed and vigorous manner, the aristocratic Whig lord, the Earl of Durham, who, in May, 1839, arrived in Canada as "Her Majesty's High Commissioner for the adjustment of certain important affairs affecting the provinces of Upper and Lower Canada." A high eulogy is passed upon this distinguished man, who in the short space of five months investigated and determined the causes of dissension in these provinces, and whose report is one of the most valuable documents ever written upon colonial affairs. Many a tribute of affection and respect is paid to the honest soldier Sir John Colborne. Though these letters add but few historical facts to those already recorded, still nothing could better enable Canadians to realize vividly the state of their country in

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those critical years, 1834-40, than a perusal of this interesting correspondence.

Mr. Bain referred to the series of papers on Lower Canada published last year in the Montreal *Star*, and urged the importance of collecting and preserving historical documents such as that read this evening, as the principal characters were fast passing away.

EIGHTEENTH MEETING.

Eighteenth Meeting, 19th March, 1892, the President in the chair.

Donations and Exchanges since last meeting, 59.

Messrs. Howland and Macdougall were appointed to attend a meeting of the Ontario Artists' Association with the Government and the University authorities respecting the preservation of the old U. C. College buildings and grounds for art, science and literature.

Messrs. Clark and Ridout were named auditors for the year.

It was decided to call a special general meeting for the 9th April next to consider certain amendments to the regulations proposed by the Council.

A vote of thanks was passed to Drs. Susanna Boyle and Letitia K. Meade for their services in the work of craniometry for publication in the last archæological report.

Mr. J. W. L. Forster read a paper on "Nineteenth Century Sacred Art." After quoting authority to show that no such art exists in this age, he made a review of the rise of the art in the middle ages and the causes that led to it. Turning to the spirit of this age and its effect upon art, he said that the art of to-day exhibited less of the adornment and precision of the conventicle, and more of the pathos of the soul that has learned for itself the meaning of suffering, right down in the throbbing populations of the world.

Mr. Harvey had made the statement at the reading of a former paper that sacred art has become impossible. Mr. Forster does not meet this question in the spirit the statement was made. He evades the question by introducing a new definition which was not the common one. He questioned very much whether religion was at all artistic. It seemed to him that the tendency in religion was to consider moral and religious questions without the aid of art, and it was better so to consider them. Mr. Forster had made the remark that art flourished more when the people were illiterate. It was the object of the art of the middle ages to educate

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the people, hence sacred subjects were placed on the stage. He considered the pictures of to-day simply figure pictures; they were not meant for incitements to faith.

A paper on "The Southwold Earthwork and Country of the Neutrals," by Mr. Coyne, was read by Mr. David Boyle. The paper dealt very fully with accounts of the almost forgotton race of Neutrals, described the country where they lived, their manners, habits, and race. They formed part of the great Huron-Iroquois family, and their territory embraced the whole of South-Western Ontario from Lake Huron to the Niagara river. The paper also gave an account of the work of the missionaries with the Neutrals, and in fact nearly all the knowledge obtained regarding them came through the missionaries.

NINETEENTH MEETING.

Nineteenth Meeting, 26th March, 1892, the President in the chair.

Donations and Exchanges since last meeting, 58.

Walter M. Rutherford and George E. Musson were elected members

The Council was instructed to take all necessary proceedings to have the Institute properly represented at the meetings to commemorate the centenary of the first parliament of Upper Canada.

Dr. George Kennedy read a paper by Mr. G. S. Wilgress, B.A., on the "Game Laws of Ontario." The writer stated that since he volunteered some four months ago to read a paper on the subject of "The Game Laws of Ontario," much had been done towards State protection of the animals known as game, as is seen in the bills now before the Ontario House of Assembly to amend the Act for the Protection of Game and Fur-bearing Animals, and to amend the Act to Encourage the Destruction of Wolves, which doubtless embody the changes recommended in the excellent report of the Fish and Game Commission recently issued. The Forest park which it is proposed to establish in the district of Nipissing will also prove a valuable means of preserving game. The writer then dwelt at some length on the deer, the different methods of hunting them, and their enemies, which he classified as men, dogs, and wolves, the latter being by far the most destructive. The paper closed with an account of the moose or elk. Considering not only the value of the hide, but also that of the head and meat, he thought that the penalty imposed at present of from $10 to $50 was certainly not large enough to deter pot-hunters from killing the animal, as they would

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lose nothing after paying the fine, provided they could succeed in smuggling the carcase away so as to be able to sell it to advantage.

After the reading of the paper, the sale of last year's periodicals took place.

TWENTIETH MEETING.

Twentieth Meeting, 2nd April, 1892, the President in the chair.

Donations and Exchanges since last meeting, 72.

Rev. Philip Tocque read a paper on "The Phocas of Terreneuve," a description of the seal fisheries of Newfoundland. A paper on "An Animated Molecule and its Nearest Relatives," by Dr. Daniel Clark, was read by Dr. George Kennedy.

TWENTY-FIRST MEETING.

Twenty-first Meeting, 9th April, 1892, the President in the chair.

Donations and Exchanges since last meeting, 71.

Mr. D. W. Beadle read a paper on "Canadian Wild Flowers."

Mr. Macdougall wished that a copy of the paper could be placed in the hands of every one of the school children of the city. It would excite an interest in the study of our wild flowers.

Mr. Noble thought that the subject that had been taken up was of interest to everybody, not as some of the papers read before the Institute, that were of interest only to some particular persons. In regard to High Park, he was glad that he had been one of those who had taken an interest in the preservation of its wild flowers and shrubs. Their efforts were successful so far as to prevent the wholesale laying waste of the wild flowers. In regard to the burning of High Park, he was very sorry to say that they had not been successful. Some plants that strike their roots deeper than others were not injured. He hoped that the practice would be discontinued.

Mr. L. J. Clark had no doubt that the School Board would be to the expense of placing a copy of the paper read in the hands of every teacher.

Mr. Armstrong spoke of the extensive destruction of the wild flowers. Every season we saw people digging them up and carrying them away, which was utter destruction; they may as well have been burned. Some beautiful flowers had entirely disappeared. With regard to High

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Park he did not expect any improvement till an intelligent gardener was placed at the head of affairs.

The meeting was pursuant to notice constituted a Special General Meeting to consider certain amendments to the regulations proposed by the Council.

The amendments were considered, and the regulations as amended were consolidated and adopted as follows, to come into force on 1st July, 1892 :—

REGULATIONS OF THE CANADIAN INSTITUTE.

(Consolidated and amended, 1892.)

SECTION I.

OF MEMBERSHIP, ELECTIONS, AND FEES.

1. The Canadian Institute, established under Royal Charter, November 4th, 1851, shall consist of Ordinary, Honorary, Corresponding, Life, Junior, and Associate members. All persons who are desirous of forwarding the objects of the Institute are eligible to membership.

2. Persons wishing to be admitted as Ordinary members must be proposed at least one week before election, in accordance with a form of application given in Form A, to be obtained from the Secretary. The election shall be by ballot, and the proportion of votes requisite for admission not less than three fourths of the votes cast. Provided that during the recess, *i.e.*, between May 1st and November 1st, the Council (as hereinafter constituted) shall have power to elect members by the unanimous vote of those present at any meeting.

3. Persons under the age of 21 years may become Junior members. They shall not be subjected to election as above, but must be recommended by two members, in writing, according to Form B., and such recommendations shall be delivered to the Secretary, and transmitted to the Council for approval or rejection. On approval, the recommendation shall be signed by the Chairman, and the candidates shall be admitted. On their attaining the age of 21, they may apply to the Council for transfer to such other class of membership as they may desire.

4. Honorary members shall be persons eminent for their services to science and literature, and their number shall be limited to twenty-five, of whom not more than ten shall be residents of Ontario. They must be recommended by at least three members, who shall state the reasons for their recommendation, in writing, such recommendation to be transmitted through the Secretary to the Council. If approved, it shall be signed by the Chairman, and read at the next ordinary meeting, previous to the ballot being taken.

5. Corresponding members shall be persons who have shown interest in the

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work of the Institute, or who have made or are likely to make contributions to the Proceedings or donations to the library, museums, etc. They shall be elected in the same way as Honorary Members for a term not exceeding five years. The number from the Province of Ontario shall not exceed ten.

6. Associate Members shall be those who wish to take special interest in portions only of the work of the Institute. They shall be admitted in the same way as Ordinary Members.

7. Associates and Junior members shall have all the privileges of membership, except the right of voting, holding office, taking part in the business management of the Institute, and receiving copies of its publications.

8. Honorary and Corresponding members shall have every privilege of Ordinary membership except that of holding office.

9. The annual fee or subscription shall be :—For Ordinary membership $5.00. For Junior membership $1.00. For Associate membership $2.00. Provided that no change shall be made in the subscriptions of members elected prior to 1st July, 1892.

Every Ordinary, Junior or Associate Member shall be liable to continued payment of the annual subscription until he has signified, in writing to the Secretary, his withdrawal, and paid all his dues to that date, when his liability shall cease. But any Ordinary Member not in arrears may compound for future subscriptions, and become a Life member on payment of $50.00.

The Secretary shall inform each candidate of his election by sending Form C. (appended), and if he fail to pay the proper fee within one month, the election shall become null, and no re-nomination shall be made unless accompanied with the said fee. Until the payment of the fees no person shall enter into the privileges of membership.

Any person elected after the 31st of March in any year shall be called upon to pay only a *pro rata* fee until December 31st next ensuing, but if such election be after the 30th September, he shall pay the subscription for the next year at the same time as the *pro rata* amount for the current year. All subscriptions shall be due for renewal on the first day of January (in advance).

Ordinary members who reside more than ten miles from the General Post Office in the City of Toronto shall be called upon to pay only $3.00 as their annual fee.

Any member whose annual subscription shall be six months in arrear shall be reported to Council on the first Monday of July, and unless the Council shall otherwise decide, shall be suspended from membership, and shall be notified of such suspension; but such member may be re-instated within the year upon payment of arrears.

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At least fourteen days previous to the annual election in each year, the Secretary and Treasurer shall prepare and sign a roll of the names and addresses of members who have paid their subscriptions, and are in good standing. Such roll, which shall be subject to correction by the Council only, shall be hung up in the Reading Room, and only those whose names appear on it shall be entitled to vote or hold office.

The Council shall have power to remit the annual subscription or arrears thereof in case of a member who, from ill health, advanced age, or other sufficient cause, is unable to pay the same, or to accept from him in lieu thereof any manuscripts, books, drawings, models, or specimens which are in their opinion valuable to the Institute. But each case must be considered and reported on by a committee of Council appointed for such purpose.

10. If any complaint is brought against a member, the charge shall be in writing, signed by the complainant, and shall be considered by the Council, and opportunity given for a reply. If the Council deem it desirable, they may then call a special general meeting for the consideration of the matter at issue, of which not less than a week's notice shall be given, and if two-thirds of the members present at that meeting are of opinion that such member should be expelled, the officer presiding thereat shall pronounce his expulsion, and the fee paid by the member for the current year shall be refunded to him.

11. For the study of special branches of Literature, Science, and Art, members may group themselves into such Sections as the Council may from time to time approve, subject to the ratification of the Institute at any of its ordinary meetings. Each Section shall form its own regulations and by-laws, but subject to the sanction of the Council, to whom they shall be transmitted for that purpose. Associate members who join any Section may vote and hold any office therein, except that of Chairman, and take part in all its proceedings.

SECTION II.

OF THE OFFICERS AND COUNCIL, AND THE MODE OF THEIR ELECTION.

1. At the annual general meeting, which shall be held on the first Saturday in May (unless that day falls upon a holiday, and then on the following Saturday), there shall be elected a President, two Vice-Presidents, a Secretary, a Treasurer, an Editor, a Librarian, a Curator, and six other members to form the Council.

2. The election shall be confined to those nominated for such positions at the last ordinary meeting in April, but any one nominated to an office, and not elected thereto, shall be eligible as a Councillor without office.

3. Election shall be by ballot, and the Chairman shall appoint two Scrutineers to receive and examine the votes, and report them to him for a declaration of the result.

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4. The officers above named shall first be balloted for by separate ballots, in the order mentioned, and one ballot shall thereafter be taken for members of the Council without office. If in any case the votes are equal, the decision shall be by ballot.

5. Each Section shall elect its officers at the meeting of the Section last preceding the annual meeting of the Institute above referred to. If there are ten members of the Section present thereat, or if during the session the Section shall have held three meetings, each attended by ten members, the Chairman elected at such meetings shall be thereby held to be nominated as a member of the Council, in terms of Clause 1 of this Section, but not otherwise.

The new Council shall enter upon their duties on the Saturday following their election.

SECTION III.

OF THE AUDITORS.

Two Auditors shall be appointed at the last ordinary meeting in March of each year; one by the members, the other by the Chairman at that meeting. They shall audit the accounts of the Institute for the year, and present their report to the Council at least one week before the annual general meeting.

SECTION IV.

OF THE COUNCIL.

1. The Council shall meet at least once a month during the session, or oftener if necessary.

2. Any two members of the Council may, by letter to the Secretary, require a special meeting to be called, and two days' notice of such meeting must be given to each member of the Council.

3. At any meeting of the Council five members thereof shall constitute a quorum.

4. The Council shall have power to appoint committees for special purposes, and such committees shall report to the Council.

5. The Council shall present at the annual general meeting a report on the state of the Institute, in which shall be given an abstract of all the proceedings, and of the receipts and expenditures, during the year ending March 31st next before such meeting.

6. In the event of any office becoming vacant before the annual general meeting, by death or otherwise, the Council shall have power to fill the vacancy; and in the event of any officer being unable to perform his duties, the Council shall have power to relieve him from their performance, and appoint another to act in his stead.

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SECTION V.

OF THE DUTIES OF OFFICERS.

1. The President shall have the general direction of the affairs of the Institute subject to the Regulations, preside at all meetings of the Institute or the Council at which he is present, and regulate and keep order in the proceedings.

2. The Vice-Presidents shall (in the order of their precedence) discharge these duties in the absence of the President.

3. In the absence from any meetings of the President and Vice-Presidents, the members present may elect one of their number to take the chair.

4. The Treasurer shall receive for or on account of the Institute all moneys payable to it, keep an account thereof, and deposit them forthwith in one of the Banks in the city of Toronto to the account of and for the use of the Institute, unless otherwise ordered by the Council. No money shall be paid out except by order of the Council.

5. The Secretary shall keep the seal of the Institute and send out the notices provided for in these Rules. He shall take minutes of all the proceedings of the Institute and of the Council, enter them in proper books, and read at each meeting the minutes of the previous meeting. Subject to the direction of the Chairman he shall bring before the meeting all business matters according to the order established in these regulations and conduct the correspondence of the Institute.

6. The Secretaries of Sections shall perform the like duties for their respective Sections, and shall, on or before the 20th day of April of each year, present to the Council a report on the work done by their Sections and the list of their members during the past year. If no such report be made, or if a Section have not held at least two meetings during the year, it shall, *ipso facto*, cease to exist.

7. An assistant Secretary may be appointed by the Council, who shall hold office during their pleasure. They shall define his duties and fix his remuneration.

8. The Editor shall have charge of the publication of the Transactions of the Institute in conjunction with an Editing Committee to be nominated by the Council from among its members at the first meeting thereof after the Annual meeting. All papers or abstracts of papers read before the Institute and intended for publication shall be handed to the Editor at the close of the meetings at which they are read, or as soon as possible thereafter, and the decision as to publishing any paper shall rest with the Editing Committee.

Every report of any Section, Committee or officer of the Institute shall be made to the Council and approved by them before publication.

9. The Librarian shall have the care of all books, documents, plans, drawings,

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and the general superintendence of the same, under the direction of the Council. He shall keep a list of all donations to the library, and report them to the Council.

10. The Curator shall have charge of the museums and of all models and specimens deposited therein, and the general superintendence of the same, under the direction of the Council. He shall keep a list of all contributions and contributors to the museums, and report them to the Council at the next meeting.

Assistant Curators may be appointed by the Sections, and shall assist the Curator in the care of the museums and the specimens contained in them so far as relates to their own departments.

SECTION VI.

OF MEETINGS.

1. The ordinary meetings of the Institute shall be held at such times as the Council shall direct, but may be changed by resolution of the Institute at any general meeting, after one month's notice. Until otherwise ordered, they shall be held at 20 o'clock on each Saturday from 1st November to 1st of May.

2. The ordinary meetings of Sections shall take place at the times agreed upon by those sections, with the approval of the Council.

3. Special meetings of the Institute may be called :—

(*a*) By the Council, giving six days' notice in writing, and sending the same by messenger or by mail to the last known address of every member.

(*b*) By the President, or, in his absence, a Vice-President, on being required so to do by at least twelve members. Such requisition must be in writing, specifying its object. The same notice should be given as in the preceding clause provided.

At such special meetings, twelve members shall constitute a quorum, and no motion shall be deemed carried unless there be such quorum present at the vote, and a majority vote in its favor.

4. Special meetings of Sections may be called by their Chairmen in any way authorised by their rules.

5. At the ordinary meetings of the Institute, the following order of business shall be observed as closely as circumstances will admit :—

(*a*) The minutes of the previous meeting shall be read, and after correction (if necessary) and approval, shall be confirmed by the signature of the Chairman, and no entry shall be valid unless this is done.

(*b*) Nominations of candidates for admission.

(*c*) Business arising out of the minutes.

(*d*) Communications and donations received since the last meeting.

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(*e*) Communications from Council and from Sections. Reports from Librarian and Curator.

(*f*) Notices of motion.

(*g*) New business.

(*h*) Election of candidates. One ballot shall be taken for all the candidates proposed on the same day, but if negative votes appear, each candidate shall be separately balloted for under Section I., clause 2.

(*i*) The reading of papers.

(*j*) Discussion thereof and remarks thereon.

(*k*) Announcements.

SECTION VII.

OF BRANCH SOCIETIES.

On the petition of ten or more persons, members of the Institute, or desirous of becoming members, and resident in any city or town in Canada, other than Toronto, the Council may make arrangements (subject to confirmation by the Institute at a special meeting) for the establishment at such places of branches of the Institute, to be governed as sections are.

SECTION VIII.

OF THE PROPERTY OF THE INSTITUTE.

1. The control of the property and effects of the Institute shall be vested in the Council.

2. No papers, plans, maps, or other property belonging to the Institute, shall be taken out of the rooms thereof, excepting under the rules to that end made and provided, but every member shall have a right to inspect the same at such hours as the Council may appoint.

3. Every person desirous of bequeathing to the Institute any manuscripts, books, maps, plans, drawings, instruments, geological, botanical, or other specimens, natural curiosities, works of art or manufacture, real estate or personal property, is requested to make use of the following form in his will, viz. :—"I give and bequeath to the CANADIAN INSTITUTE, incorporated by Royal Charter, November 4th, 1851 *(here enumerate and particularize the effects or property intended to be bequeathed)*, and I hereby declare that the receipt of the Treasurer of the said Institute for the time being shall be an effectual discharge to my executors for the said legacy."

SECTION IX.

OF VISITORS.

Members may introduce their friends or strangers visiting the city to the meetings of the Institute or to the reading rooms and museums under such regulations as the Council may from time to time make, and the Institute approve.

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SECTION X.

AGREEMENT WITH THE NATURAL HISTORY SOCIETY.

Nothing in these Resolutions shall interfere with rights enjoyed under a special agreement heretofore made with the Natural History Society of Toronto.

SECTION XI.

OF ALTERING THE REGULATIONS.

These Regulations shall come into force on the first day of July, 1892.

A motion to alter them may be made at the annual general meeting, or at a special general meeting called for the purpose, and not otherwise ; and notice of the proposed alteration shall be given at two consecutive ordinary meetings prior thereto.

APPLICATION FOR MEMBERSHIP.

[*Form A.*]

To The Canadian Institute:

I, the undersigned, proposing to become a of the Canadian Institute, do hereby promise that I will be governed by the Royal Charter and by the Regulations and By-laws of the said Institute, and I promise to promote its objects as far as shall be in my power, and to attend the meetings thereof as often as I conveniently can.

Witness my hand, this day of 189

.....

We, the undersigned, consider the applicant a fit and proper person to belong to the Canadian Institute.

Witness our hands.

..... } *Members of the Institute.*
..... }

[*Form B.*]

We, the undersigned, consider a fit and proper person to be a junior member of the Institute. He is years of age.

Witness our hands.

.... } *Date*.. .....
..... }
Members of the Institute.

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[*Form C.*]

CANADIAN INSTITUTE,

.....

SIR,—

I have the honor to inform you that you were duly elected (a member) or (Associate) of the Canadian Institute, on the day of and I beg to enclose a copy of the regulations.

The subscription for the current year, you will observe, is payable within a month of the date of your election. On your remitting the amount to the treasurer, all publications or notices to which you are entitled will be forwarded according to your directions.

I have, &c., &c.,

.....*Secretary.*

[*Form D.*]

CANADIAN INSTITUTE,

.....

SIR,—

I have to call your attention to Rule 9, Section 1, which provides that as your subscription was not paid prior to July 1st, inst., you are suspended from membership, but on payment of the same you will be re-instated.

I have, &c., &c.,

.....*Secretary.*

REGULATIONS OF THE LIBRARY AND READING ROOM.

Adopted at meeting of Council, February 1st, 1892.

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1. Any member may obtain the loan of any periodical from the Reading-Room, not to exceed two numbers at any one time, for a period not longer than one week.

2. Periodicals shall not be loaned until they have been on the table one month in the case of monthlies and quarterlies, and one week in the case of weeklies.

3. Any member may obtain the loan of any exchange from the Reading-Room after it has been 14 days on the table, not to exceed two numbers at any one time, for a period not longer than 14 days, which may be renewed for further periods on presentation of the volume at the Institute, if in the meantime, no request for the same has been made by any other member.

4. Any member may obtain the loan of any book from the Library, not reserved under rule No. 11, not to exceed three volumes at one time, for a period

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not longer than one month, which may be renewed for a further period of one month on presentation of the volume at the Institute, if in the meantime, no request for the same has been made by any other member.

5. Non-resident members may obtain the loan of periodicals, exchanges or books, by paying the postage both ways.

6. If any member retain a periodical or exchange from the Reading-Room or a book from the Library longer than the time specified, he shall be notified by the Librarian and shall return it at once. Any member failing to comply with this regulation shall forfeit his right to receive the Transactions of the Institute.

7. In case any book or periodical is injured or lost while in the possession of a member, it must be replaced by a perfect copy or an equivalent in money.

8. No book or periodical shall be removed from the Library or Reading-Room without the permission of the Librarian, and the presentation of a ticket signed by the applicant, who shall be responsible for the books, &c., taken out until such ticket is cancelled.

9. Any Member may introduce a friend, not resident in Toronto or vicinity, to the privilege of reading in the Library or Reading-Room for a period not exceeding one month, on entering his own name with that of the person introduced by him in a visitors' book to be kept for that purpose, such privilege not to be renewed until a period of six months shall have elapsed.

10. Any person not a member of the Institute engaged in any special scientific enquiry or research, may be allowed to consult the exchanges and books under such rules and regulations as the Council shall from time to time determime.

11. The Librarian shall reserve from public circulation such periodicals, books, engravings, drawings, plans and other documents for reference purposes, as the Council may from time to time determine.

TWENTY-SECOND MEETING.

Twenty-second Meeting, 16th April, 1892, the President in the chair.

Donations and Exchanges since last meeting, 43.

George W. Grote was elected a member.

A paper by Rev. Dr. MacNish on "Celtic Prosody" was read by Dr. George Kennedy. The paper, after alluding to the important place held in Celtic literature by poetry, dwells upon the contrast between Greek and Latin verse and Celtic verse, the scansion of the one depending on quantity, that of the other on accent. Celtic poetry is founded up-

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on the agreement of sounds, hence arise rhyme, alliteration, and concord not always depending on the coincidence of final words, but also on some radical vowel in corresponding words, and these not terminal alone, but recurring in several places throughout the verse. Numerous illustrations were given of the various kinds of correspondence and concord, examples being taken from Gaelic, Irish, Armorican and Welsh poems, both ancient and modern, among the modern being Evan MacColl. The hope is expressed that some one with sufficient leisure will prepare a Celtic classical dictionary to do for Celtic scholars what Lempriere and Smith have done for Greek and Latin students, and that some Hermann or Bentley will soon appear with a full and lucid treatise on Celtic prosody, acting, until his task has been happily completed, on the advice of one of the acknowledged masters of Latin verse: "Nocturna versate manu, versate diurna."

TWENTY-THIRD MEETING.

Twenty-third meeting, 23rd April, 1892, the President in the chair.

Donations and Exchanges since last meeting, 61.

A. Gilchrist and T. A. Patrick, M.D., were elected members.

A communication was read from the Royal Society of Turin, announcing the conditions of the Bressa Prize.

The following resolution was passed, on motion by Mr. Bain, seconded by Mr. Hunter:—

"The Canadian Institute is called upon to mourn the loss of one of its honorary members, the late Abbé Provancher, who during his lifetime was an ardent and zealous naturalist, working in the fields of Botany and Zoology. He furthered, by his indefatigable labors as editor of *Le Naturaliste Canadien* during twenty years, the expansion of these branches of science, and gave to the world the results of his diligent and thorough research. The Institute places on record its appreciation of his services to science, and joins with the rest of the Dominion in mourning for the loss the scientific world has suffered in his death."

Mr. L. J. Clark read a paper on "Lake Currents." He explained the nature of the investigations carried on by the City Engineering Department last summer, for the purpose of ascertaining if sewage could be safely discharged into the lake, and, if so, the most favourable place. Operations were carried on from 35 to 40 days during the months of July, August, September, and October, under the supervision of Mr. C. Rust, Assistant Engineer. The Provincial Board of Health made an

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analysis, both bacteriological and chemical, of a large number of samples of water, taken from the bay and from other points. The general tendency of the currents seemed to be controlled by the direction of the wind, although in some cases the undercurrent was found to be contrary to the wind and to the surface current. They mostly flow parallel to the coast line, that is north-east and south-west; and he is of the opinion that if the sewage were discharged well out into the lake, to the east of the intake pipe, there would be no danger of contaminating the water supply of the city. The intake pipe is considered to be in the best possible location, as it is the nearest point where deep water can be reached: and the main thing is to carry the sewage beyond the range of the mouth of the pipe.

Mr. Alan Macdougall read a paper on "The Indian as an Artist." He acknowledged the indefatigable labors of Mr. David Boyle in the cause of archæology and the generous liberality of the Provincial Government in aiding this branch of science by its annual grants. Referring to the Indians of this Province, he regretted the absence of any early writings from which one could learn anything of the technique of the Indians when the Jesuits laboured among them. Judging them by their pottery, there was reason to believe they must have had some alliance, ethnological or commercial, in early days with that interesting nation the Mound Builders. By numerous illustrations of their work, he pointed out the beauty of form in their flint arrow heads, the stone chipped celts, and other implements, all of which contain the special angles which form the graceful lines of the Gothic arch and other proportions which grace many architectural designs. Passing on to the Pacific coast, a rapid review was given of the work of the Queen Charlotte Island Indians, for whom he claimed an Egyptian origin, as the basis of their art. Filtered through many vicissitudes of wanderings and comminglings with other nations, the origin of their art was lost; but a hereditary instinct seemed to be left to them which gave them the skill requisite to produce the beautiful slate carvings which are undoubtedly entitled to rank as works of art. Assuming this to be the characteristic of the tribes, there seems to be sufficient authority to advance the theory that years ago, by trade if by no other means, the British Columbia Indians came under the influence of East Indian, and perhaps Japanese, art. Even in their grotesque carvings there are evidences of these influences. Referring to the famous totem poles, he illustrated through numerous photographs his belief that they were heraldic symbols, and expressed his belief that the Indians of this continent are the remains of a civilization which has been the foster mother of Greek and Roman and all other art.

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TWENTY-FOURTH MEETING.

Twenty-fourth Meeting, 30th April, 1892, the President in the chair.

Donations and Exchanges since last meeting, 45.

Thomas McCraken and D. W. Beadle were elected members.

Nominations were made for officers and members of Council for the ensuing year.

The President read a translation from the Italian of the conditions of the Bressa Prize.

A paper by Mr. Richard Nettle on "The Artificial Propagation of Salmon and Trout in Canada," was presented by the Secretary. The first ovarium was constructed in Mr. Nettle's office in Quebec in 1857. He appears to have been very successful in his efforts. In 1862, an enthusiastic fly-fisher told him the River Moisie had increased its output in four years from 300 to 800 barrels. Reports from other rivers were equally favourable. He mentions an interesting case of gold fish leaping out of their division of an aquarium into that of the young salmon and devouring them; and another in which ova taken from a trout had vivified and hatched out in large numbers.

A. F. Chamberlain, M.A., Ph.D., read a paper on "Colour Comparisons in the Low German Poets." He discussed the use of colour comparisons by Meyer, Groth, Boysen, Babst, Bornemann, Weber, Ahrens, Ernst, Heyse, and other Plattdeutsch poets, paying special attention to those who wrote in the Ditmarsch dialect. By "colour comparisons" are meant such compounds and similes as correspond to the English:—Snow-white, pitch-dark, sky-blue, blood-red, bottle-green, green as grass red as a lobster, black as a crow, etc. Individual writers sometimes, prefer special forms, such as "rose-red," "white as chalk." The users of dialect often show their keener insight into nature by the comparisons which they employ. Thus we have "green as a beech tree in May," "eyes blue as the forget-me-nots," "yellow as the dandelion," "eyes black as currants," "white as a birch," etc. The presence of certain things favours the general use of some one form of comparison more than all others. Thus in some districts "white as a sea-mew," "white as chalk," "green as grass," may attain such general acceptance. He also referred to and discussed some curious figurative uses of the words for colour in the Plattdeutsch languages, such paradoxical forms as rot black ("red ink," literally, "red black"), groen black ("green ink") occur not infrequently. In one dialect witt lachen ("to laugh white") signifies to laugh in a kind or agreeable manner, and in another, gel snacken ("to

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talk yellow") means to talk High German, which the Plattdeutsch peasant pleases to term "nonsense." In another part of the Low German linguistic territory an imperfectly known or uncertain colour is called blitzblau und dunnergrau ("lightning blue and thunder grey") though it may be neither blue nor gray.

Prof. A. B. Macallum, B.A., M.B., Ph.D., read a paper on "The Structure of Cell Protoplasm." It treated of the question of the structure of living protoplasm as known from studies on the dead cell, and from observations on the living elements. The various views were commented upon, and it was pointed out that all of these were the result of observations in limited fields of cystological research; that while, for example, the reticular structure is present in some cellular elements, the vesicular forms in others, and the fibrillar in others again, neither of these types of structure may be present in the living cell, and that, therefore, students must look to some other view which will cover, more fully than those at present at their disposal, all the phenomena of cell structure already observed and at the same time explain the relations of the nucleus to the cell and to life. A view was advanced that the cell protoplasm is an intermediary organ between the living element proper—the nucleus—and the outer world, and that the protoplasm is largely, if not wholly, derived from the nucleus elements, and therefore, as life advances, in accordance with Prof. Minot's view, the nuclear substance diminishes while the cell protoplasm is increased so much that the physical conditions imposed by so relatively large an intermediary organ bring the life of the element to an end. This view was applied to the elucidation of some of the phenomena connected with secretion, excretion, movement, etc. Its connection also with the present views as to what life is was also discussed.

FORTY-THIRD ANNUAL MEETING.

The Forty-Third Annual Meeting was held on 7th May, 1892, the President in the chair.

Donations since last meeting, 80, including 77 back numbers of The Canadian Journal, presented by the executors of S. B. Harman; Exchanges, 51.

A letter was read from the P. O. Dept., Ottawa, stating that the Postmaster General had received authority from the Executive Council to relieve the Institute of the expense of prepaying postage on their reports issued from time to time, and to either frank them or place the necessary stamps upon them. The Secretary was instructed to return thanks to the Post Master General.

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The election of officers and members of Council for the ensuing year resulted as follows :—

President—Arthur Harvey, Esq.
Vice-President—Prof. A. B. Macallum, Ph.D.
Secretary—Alan Macdougall, M. Inst. C.E.
Treasurer—James Bain, Jr., Esq.
Librarian—D. R. Keys, M.A.
Curator—David Boyle, Esq.
Editor—George Kennedy, M.A., LL.D.
Members of Council—O. A. Howland, Esq.
L. J. Clark, Esq.
A. Blue, Esq.
James H. Pearce, Esq.
John Maughan, Ch. Biolog. Sec.
J. B. Williams, Sec'y Biolog. Sec.
J. C. Hamilton, LL.B., Ch. Hist. Sect.
B. E. Walker, Ch. Geol. and M. Sec.

The 43rd Annual Report was read and adopted.

The following resolutions were passed :—

That the thanks of the Institute be tendered to the Press for their courtesy in reporting so fully the meetings of the Institute.

That the Council be requested to consider the propriety of applying to the Dominion Government for a supplementary charter to add History, Literature and Art to the objects the Institute may study and promote, and to make clear the mode of election of the members of the Council.

FORTY-THIRD ANNUAL REPORT.

The Council of the Canadian Institute has the honor to lay before its members its Forty-third Annual Report.

It is once more an agreeable task to record the progress of the Institute. The meetings have all been well attended. An ample supply of papers, with a range as wide and varied as in any previous session, has created much interest and elicited spirited discussions at the ordinary meetings.

During the present session the regulations and by-laws have been remodelled and adopted at a special general meeting held for that purpose on the 9th of April. Considerable changes have been made; two new classes of members have been introduced—corresponding members

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and associate. The former is an old class revived, on lines likely to promote interest in the Institute. The latter is a new class, which has very wide limits, created for the purpose of enlisting the co-operation of many who, not sufficiently advanced in science to be interested in all the work of the Institute, are earnest workers in such subjects as history, archæology, geology, botany, political and economic science.

The small fee of $2 per annum will enable many to join, and take advantage of the liberal privileges extended to this class.

The rules of the library and reading room have also been amended. The new rules came into force on the 1st of February and have since that date been carried out to the advantage of the members.

The interest in the work of the sections increases.

The Biological or Natural History Section has held 15 meetings, at which 15 papers were read. The field days have been as successful as formerly, and the work of the sub-sections has been vigorously carried on.

The Historical Section has increased its membership from 27 to 45. Six meetings were held during the session ; all were well attended ; six papers were read. The Section makes special note of the increasing interest in historical matters, both in the Institute and by the general public, and expresses satisfaction at the steps taken by the government towards the establishment of a natioual park.

The Mining and Geological Section held three meetings at which a like number of papers were read. The membership has not increased, though they look for an increase in the immediate future.

Early in the summer of last year, a movement was inaugurated to consider the most advantageous scheme for enlarging the scope of the Institute, and the advisability of removing to a more central and readily accessible situation. Two plans were presented: one embraced the enlargement of the present building by adding a museum on the vacant portion of our lot, and remodelling the present reading room and library ; the other contemplated the removal of the Institute from the present site to one in a more northern or up-town district. After several meetings had been held, at which the projects were fully discussed, the members at a special General Meeting called for the purpose on the 19th June, 1891, vetoed all the proposals laid before them.

The adoption of cosmic time, in relation to the use of the 24-hour notation, has been greatly advanced by the labors of a special committee of the American Society of Civil Engineers, the chairman of which was our distinguished honorary member, Sandford Fleming, LL.D., C.M.G.

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The Committee recommended in their final report which was presented on the 20th January, 1892, the adoption of the new notation of time on all railways in America "on the 12th October, 1892; that date being suggested in compliment to the fatherland of Columbus." The report states that "From the latest information received, it is evident that Europe is now making the first great step in time reform which America made in 1883, in introducing Standard Time into general use. In the second important step, the adoption of the 24-hour notation, this country is somewhat anticipated by India, and we need not be greatly astonished to hear of a rapid development of the reform in Europe, when once the first step is fully taken."

The Council noted with much pleasure the formation of a Royal Commission to enquire into the protection of fish and game.

A Royal Commission has been issued to enquire into and report upon the preservation of the forests and the formation of a National Park.

A paper of very great interest to the fruit-growing industry was presented by Dr. W. R. Shaw, the subject being the disease known as "Peach Yellows." This paper created a deep interest in the great peach-growing district, the Niagara peninsula. Resolutions were passed by the Lincoln Farmers' Institute, and the Fruit Growers' Association, the Council of the Township of Niagara, and other bodies, requesting the Institute to bring the subject under the notice of the Local Legislature during its last session. An influential deputation from the bodies named, accompanied by a Committee from the Institute, waited on the Government, by whom they were courteously received. Owing to the late period of the session it was not practicable to introduce the legislation asked for; there is no doubt, however, that at the next session important legislation will be obtained intended to prevent the spread of peach yellows, black knot, and other dreaded diseases among our orchards, and that this valuable and extensive industry will have proper protection accorded to it.

A paper on Electoral Representation and the Rectification of Parliament, by Dr. Sandford Fleming, has created great interest. A friend of the Institute, who has declined to make known his name, has generously placed at the disposal of the Council the sum of $1,000, to be awarded in whole or in part, for the best measure which if made law would give to the whole Canadian people equal representation in Parliament and each elector due weight in the Government through Parliament. The conditions of the competition have received the most careful attention of the Council, and will be made public in a few days.

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The invitation to hold a summer convention in the town of Penetanguishene led to a very pleasant and interesting visit to soil rendered historical by the establishment there at a very early epoch of a fort for the protection of the Jesuit Fathers and the French interests at large. The convention was held on the 25th and 26th September, the meetings were well attended, and the papers read by the resident historians were of much interest. An Excursion was made to Christian Island on the 26th. A meeting was held in the Council chamber of the Indian village of St. Joseph, at which Chief Samuel Assance, Thomas Skye, a veteran of 97 years of age, and John Monague spoke. The latter, an old man of 80, gave an interesting account of how he and others were taken to Toronto, in 1837, and sent to look out and intercept Mr. W. Lyon Mackenzie. He added naively that as he and his party did not know Mr. Mackenzie, they did not see how they could intercept him. Fort Ste. Marie was thoroughly explored. Another excursion was made to Fort Ste. Marie, on the River Wye, near the town of Midland, on the 28th ; the ruins examined, the site traced out, the water gate readily recognized and the channel of the canal, which had been used by the Jesuits for approaching the fort, identified. A proposal to secure this extremely interesting historical site for future preservation as a public memorial has received encouragement, and an advantageous offer for the purchase of the land on which the fort stands has been made to the Institute.

The Council takes pleasure in again acknowledging the generosity of the Government in continuing the Archæological grant.

The Archæological Report of the curator published in advance of this, again deals with a wide field of interest. In the chapter on craniometry, 48 skulls are figured and described ; the Institute is indebted to Drs. S. K. Boyle and L. K. Meade for their kind labors in this matter. The demand for this report has been so great that the edition is already exhausted.

Additions by purchase and presentation have been made to the museum of specimens from all parts of the Dominion, the greater number being naturally from friends in our own province. A full list of the names of donors to the museum is published in the report.

An agreement was entered into with the Public Library Board for the transfer of the custody of our Archæological collection to that Board, to be placed in their proposed museum. The arrangement has unfortunately been interfered with by adverse action of the City Council, but there is still a prospect of arrangements being arrived at which will carry out in part this plan, thereby relieving the overcrowding of the

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museum and library and placing considerable space at the disposal of the sections for the extension of their special work.

The approaching centennial celebration of the formation of the Province of Upper Canada, and the institution of parliamentary government which gave us self-governing powers, is to be celebrated with fitting ceremonies at Niagara on the 16th July, and in Toronto on the 17th September. The Council impresses on the members the value of the occasion to urge on the government and the public generally, the great importance of preserving historical documents deserving the attention of the administrations of all the provinces in the Dominion, as well as the preservation of historical spots, such as the numerous forts scattered over the provinces, which have played important parts in our early history.

The accommodation in the reading room is inadequate, and the comfort of the members in consequence much impaired; it is intended to relieve this as soon as the museum can be moved to the public library building.

The Treasurer's accounts have been audited and found correct. They will be found in Appendix II.

The state of the membership will be found in Appendix I.

When the new rules and regulations come into force on the 1st of July of this year, the present associates will be termed juniors.

An entirely new class has been formed who will be known as associates.

During the past year the Institute has lost by death one honorary member, the Abbé Provancher; two life members, Dr. T. Sterry Hunt, and Mr. John Page, and one ordinary member, Mr. Chas. Levey.

The thanks of the Institute are due and are tendered to the Press for full reports of our meetings.

The reports of the Sections are given in full in the appendices.

The Council again acknowledges with pleasure the services rendered to the Institute by the Assistant Secretary, Mr. R. W. Young, M.A.

All of which is respectfully submitted.

ARTHUR HARVEY,
President.

ALAN MACDOUGALL,
Secretary.

TORONTO, 29th April, 1892.

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APPENDIX I.

MEMBERSHIP.

Honorary Members		6
Life Members		9
Ordinary Members, May 1, 1891	273	
Deaths	1	
Resignations	12	
Suspense	1	
Names erased	16	
	30	
	243	
Members elected, 1891-92	40	
		283
Total membership, 1 May, 1892		298
Associates as at May 1, 1891	17	
Resignations	2	
Names erased	1	
Transferred to members	2	
	5	
Total, May 1, 1892	12	

APPENDIX II.

FINANCIAL STATEMENT.

James Bain, Jr., Treasurer, in account with the Canadian Institute for the year ending March 31st, 1892.

DR.

To Balance in Imperial Bank	$ 668	39
" Cash in hand	42	34
" Annual Subscriptions	718	31
" Rent	19	25
" Government Grant	1,000	00
" Periodicals sold	46	15
" Extra Copies of Transactions	3	27
" Interest on Deposits	24	58
" Dr. Fleming's Annual Donation	200	00
" Amount refunded by Univ. Library for binding	9	32
	$2,731	61

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CR.

By Salaries	$384 00
" Printing (Transactions)	386 84
" " (Miscellaneous)	58 62
" Engraving	148 89
" Stationery	35 10
" Postage	165 35
" Freight and Express Charges	14 74
" Repairs	67 43
" Gas	34 90
" Water	6 25
" Periodicals	154 30
" Furniture	102 20
" House Cleaning	71 50
" Fuel	118 00
" Museum Expenses	5 68
" Duty	43 00
" Type Writing	5 00
" Surveyor's Report	5 00
" Legal Expenses	6 00
" City Directory	5 00
" Petty Charges	3 60
" Interest	200 00
" Balance in Bank to Building Fund	700 00
" " " Ordinary Account	80
" Cash in Hand	9 41
	$2,731 61

Examined and found correct.

(Signed) JOHN G. RIDOUT, L. J. CLARK, } *Auditors.*

April 25th, 1892.

ASSETS AND LIABILITIES.

ASSETS.

Building and Grounds	$18,000 00
Library	5,000 00
Specimens	6,000 00
Personal Property	1,000 00
Building Fund, Cash in Bank	700 00
	$30,700 00

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LIABILITIES.

Mortgage due 1896	$ 4,000 00
Balance in favour of the Institute	26,700 00
	$30,700 00

Audited as an approximate estimate.

(Signed) JOHN G. RIDOUT, L. J. CLARK, } *Auditors.*

April 25th, 1892.

ARCHÆOLOGICAL FUND.

James Bain, Jr., in account with the Archæological grant to the Canadian Institute, 1891-92.

1891.		
May 1.	To Balance in hand	$ 180 05
June 22.	" Annual Grant	1,000 00
	Balance due Treasurer	7 63
		$1,187 68

1891.		
By	Travelling Expenses and Postage	$ 188 45
"	Purchase of Specimens	518 85
"	Curator's Salary	400 00
"	Cases	80 00
"	Bank Draft	38
		$1,187 68

Audited and found correct as per vouchers.

(Signed) JOHN G. RIDOUT. L. J. CLARK. } *Auditors.*

April 25th, 1892.

We the undersigned Auditors beg leave to report that we have checked the cash account with the vouchers, and have examined the bank book and find the various items and balances correct; and have also examined and compared with vouchers the various items relating to the Archæological grant, and find the same, as well as the balance due the Treasurer, correct.

Respectfully submitted.

(Signed) JOHN G. RIDOUT, L. J. CLARK, } *Auditors.*

Toronto, April 25th, 1892.

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APPENDIX III.

PAPERS READ DURING THE SESSION 1891-92.

1891. Nov. 7. "A Critical Review of the Enterprise of Christopher Columbus,"—Inaugural Address by the President, A. Harvey.

" " 14. "The Formation of Niagara River,"—W. J. Smith.

" " 21. "Déné Roots,"—Rev. A. G. Morice, O.M.I.

" " "Peach Yellows,"—W. R. Shaw, M.D.

" " 28. "St. Columba, or Colum Cille,"—Rev. Neil MacNish, LL.D.

" Dec. 5. "The Spirit of National Art,"—W. A. Sherwood.

" " 12. "The Finances of the American Civil War,"—W. A. Douglass, B.A.

" " 19. "Testing the New Water-pipe,"—Levi J. Clark.

1892. Jan. 9. "The Aborigines, or Bœothicks of Baccalaos,"—Rev. Philip Tocque, A.M.

" " 16. "Economic Science for Canadian Students,"—W. Houston, M.A.

" " 23. "The Abenakis of the Saint John River,"—Edward Jack, Fredericton, N.B.

" " 30. "The Volcano of Kilauea and the Hawaiian Islands,"—H. Spencer Howell, Galt, Ont.

" Feb. 6. "The Great Centre: An Astronomical Study,"—J. C. Hamilton, LL.B.

" " 13. "Siberian Inscriptions,"—Rev. Prof. Campbell, LL.D.

" " 20. "Electoral Representation, and the Rectification of Parliament,"—Sandford Fleming, LL.D., C.M.G.

" " 27. "Early Traders and Trade Routes in Ontario and the West,"—Captain Ernest Cruikshank.

" Mar. 5. "History of Greenland and Iceland,"—W. D. Stark.
"Rutherford's Narrative: An Episode in the Pontiac War, 1763: An unpublished MS., with introductory notes,"—Arthur Harvey.

" " 12. "Lieut.-Col. Coffin and his Private Correspondence during the Rebellion of 1837,"—H. R. Fairclough, M.A.

" " 19. "Gleanings from European Art Fields; II. Paper: (Nineteenth Century Sacred Art),"—J. W. L. Forster.
"The Southwold Earthwork, and the Country of the Neutrals,"—James H. Coyne, B.A.

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1892. Mar. 26. "The Ontario Game Laws,"—G. S. Wilgress, B.A., Barrister, Huntsville.

" April 2. "The Phocas of Terre-Neuve,"—Rev. Philip Tocque, A.M.

"An Animated Molecule and its Nearest Relatives,"—Daniel Clark, M.D.

" " 9. "Canadian Wild Flowers,"—Delos W. Beadle.

" " 16. "Celtic Prosody,"—Rev. Neil MacNish, LL.D.

" " 23. "Lake Currents,"—Levi J. Clark.

"The Indian as an Artist,"—Alan Macdougall, M. Inst., C.E.

" " 30. "Colour Comparisons in the Low German Poets,"—A. F. Chamberlain, Ph. D.

"The Structure of Cell Protoplasm,"—Prof. A. B. Macallum, Ph. D.

"On the Artificial Propagation of Salmon and Trout in Canada,"—Richard Nettle.

Total number of papers read at the ordinary meetings of the Institute during the session 1891-92, 31, which may be classified as follows:—

Archæology	1	History	5
Astronomy	1	Literature	1
Biology	3	Philology	4
Botany	1	Pisciculture	1
Economics	2	Political Science	1
Engineering	2	Zoology	1
Ethnology	3	Miscellaneous	1
Fine Arts	2		
Geography	1	Total	31
Geology	1		

READ AT MEETINGS OF SECTIONS.

Biological Section	15
Geological and Mining Section	3
Historical Section	6
Total	24
Total read during the Session	55

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REPORT OF THE LIBRARIAN.

TORONTO, May 6th, 1892.

To the Council and Members of the Canadian Institute :—

GENTLEMEN,—In presenting his annual report your librarian has first to record the establishment of a new set of rules intended to facilitate and increase the use of books and periodicals by making it possible for a larger number of members to avail themselves of the privileges of the library and the reading room. The experience of the few weeks during which the rules have been in operation gives evidence that they have had the effect intended, and have been appreciated by the members whose earnest co-operation in carrying them out will add greatly to the educative value of this important branch of the work of the Institute.

The cataloguing of the library has been deferred owing to the state of the treasury, which has rendered it impossible to obtain even the smallest appropriation for such a purpose. Your librarian would urge upon the Council and members the importance of a catalogue and the insecurity that results from the lack of one in the present state of the library.

The plan for a bibliographical catalogue of the contents of the Institute's periodicals and exchanges has made better progress. This scheme requires men rather than money, and it is a pleasing proof of the scientific ardor of the members of the Institute that a number of gentlemen have undertaken this laborious but not uncongenial task. In connection therewith the President has suggested the preparation of a bibliography of the Transactions of the Institute to which he himself has already made an important contribution, and which it is proposed to complete in the course of the coming session.

In conclusion your librarian begs to report the library statistics as follows :—

LIBRARY STATISTICS—1891-92.

Periodicals subscribed for	34
Separate numbers received from April 1, 1891, to April 1st, 1892	835
Number of books and periodicals taken out	2,013
Number of societies, individuals and periodicals to which the publications of the Institute are sent	525

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DONATIONS AND EXCHANGES.

(From April, 1891, to, April 1892.)

Donations	176
Exchanges received from—	
Canada	247
United States	911
Mexico, West Indies and South America	59
Great Britain and Ireland	484
Austria-Hungary	157
Belgium	18
Denmark	5
France	441
Germany	421
Italy	235
Netherlands	30
Norway	35
Portugal	13
Roumania	3
Russia	54
Spain	15
Sweden	14
Switzerland	12
Turkey	19
Asia	75
Australasia	19
Total Exchanges	3,267
Donations	176
Purchases	835
Total received during the year	4,278

All of which is respectfully submitted,

(Signed) D. R. KEYS,
Librarian.

REPORT OF THE BIOLOGICAL SECTION OF THE CANADIAN INSTITUTE, 1891-92.

TORONTO, April 20th, 1892.

It is with pleasure that on my retirement from the office of Secretary of this Section, I am able to report a successful session.

Fifteen meetings have been held, at which fifteen papers were read. A schedule of them is attached.

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Field days have been very successful, many plants having been added to our museum through the energy of the members and their friends. The outings were held at Mount Dennis, Scarboro Junction, and Victoria Park respectively, with good attendance.

Most of the work of the Section has been concentrated in its Sub-sections.

The Ornithological Sub-section has again handed in a vast amount of very valuable material for publication. The work of this Sub-section is advancing, and the results are increasing under the able chairmanship of Mr. Wm. Brodie.

The Microscopical Sub-section has been progressing. The work done is not confined to any particular branch of Microscopical Science, but embraces both Organic and Inorganic Science, and which is being thoroughly investigated under the leadership of Mr. G. G. Pursey, at meetings held fortnightly throughout the year.

The Botanical Sub-section, under the chairmanship of Mr. Samuel Hollingworth, was organized on April 11th, 1890, and has held 35 meetings, at which 557 species of plants were identified, of which 389 bear date up to the end of 1890, including specimens from the collection of the late Dr. Cowdry, collected in and after 1866, also a collection by Mr. Samuel Hollingworth, 1885, and a collection of ferns by J. L. Little, 1888. Four hundred and seventy-four species were identified in 1891, of which 171 were new records over the previous year. Of the above total 499 species were found in the vicinity of Toronto.

This Sub-section has again to acknowledge great assistance from Miss Alice Hollingworth, of Beatrice, Muskoka, in collecting specimens and information of the 'flora' of that district, also to Mr. Geo. P. Payne, of Toronto, to whose energy in collecting we owe many of the specimens in our Herbarium.

Several additions have been made to the museum, and our Curator, Mr. Jas. Noble, is now busy arranging the different departments, with a help of a museum committee. The Botanical cabinet is finished and most of the specimens are transferred to it, but not yet properly arranged and catalogued.

Your President of the Natural History Society, and Chairman of the Biological section of the Canadian Institute desires to thank you for his position for four years, to express his regrets that ill-health precludes him from attending night meetings at the season which demands his

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presence, and to say that all he can do in the future will be willingly accorded, with the knowledge that the study of nature brings us closer to nature's God.

JAMES H. PEARCE, *President.* CHAS. W. ARMSTRONG, *Secretary.*

PAPERS READ DURING SESSION 1891-92.

Jas. H. Pearce ..... *President's Address.*
C. W. Armstrong ..... *Eucalyptus Globulus.*
Arthur Harvey ..... *Latest Developments of Glacial Action around Toronto.*
Jas. Noble ..... *Trilliums*
J. Thurston ..... *Report of Ornith. Sub-section.*
J. B. Williams ..... *Migration of Evening Grosbeak.*
C. W. Armstrong ..... *Botanical Sub-section: Its Work and Progress.*
Jas. H. Fleming ..... *Birds Seen in the Market at Nice.*
J. Maughan, Jr ..... *Taxidermy as an Art. Part I.*
W. D. Stark ..... *Solan Goose.*
J. B. Williams ..... *Notes on an European Tour.*
Jas. Noble ..... *Vernation.*
J. B. Williams ..... *Canadian Walking Stick Insect.*
Alice Hollingworth ..... *Scientific Researches in Rural Districts.*
Jno. Maughan, Jr ..... *Taxidermy as an Art. Part II.*
" " " ..... " " " *Part III.*

REPORT OF THE GEOLOGICAL AND MINING SECTION.

TORONTO, April 29th, 1892.

Hon. Secretary of the Council of the Canadian Institute:—

DEAR SIR,—I beg to report on the Geological and Mining Section for the season 1891-92.

There have been three papers read before the Section during the present year, viz., one by Mr. Hamilton Merritt, F.G.S., on the "Silver Ores of West Kootenaie, B.C." Mr. Merritt shewed numerous samples collected during his visit to that Province, and gave an interesting account of the Geological features of that important region.

Mr. J B. Hammond, of Sudbury, read a paper on "The Nickel Deposits of Algoma," which was followed by an interesting discussion.

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Mr. George Mickle, M.E., read a paper on the "The new Nickel Compound, Nickel Carbon Oxide," and exhibited specimens of Nickel which he deposited on glass tubing from this gaseous compound.

The Section regret to report that their membership has not increased during the present year, but several have promised to join next year, and their presence will, no doubt, impart new life to the Section.

The following officers were elected for the coming year :—*Chairman*, Mr. B. E. Walker ; *Vice-Chairman*, Prof. Coleman ; *Secretary*, George Mickle, M.E.; *Committee*, Messrs. Archibald Blue, D. Boyle, Arthur Harvey, T. R. Clougher, W. H. Merritt, F.G.S ; *Curator*, Mr. R. Dewar.

I remain, yours,

GEORGE MICKLE,
Secretary Geological and Mining Section.

REPORT OF THE HISTORICAL SECTION.

TORONTO, April 21, 1892.

To the Council of the Canadian Institute :—

The Historical Section begs to report, at the end of its second year's existence, that the number of members on its roll has increased from 27 to 45. The attendance at the meetings has been large and the discussions following the reading of papers full of interest. The Section notes with much pleasure the increased attention given to historical subjects by the Institute at large, also by the general public, and believes it has in some measure contributed thereto. Under the new and liberal rules of the Institute, which permit gentlemen and ladies who are interested in the particular work of any one section to become associates of the Institute for a merely nominal fee and to take part in all the proceedings of that Section, it is probable that a further impetus may be given to the study of History, which has hitherto been in Canada too much neglected.

The following proceedings are recorded in the minutes of the Section :—

Oct. 16th, 1891.—Business meeting, recommending the purchase by public subscription of the site of the old Fort Ste. Marie, on the Wye. Correspondence between our local agent and the owner is in progress, which will, it is hoped, result satisfactorily in securing this interesting spot for the Institute.

Nov. 19th, 1891.—Paper by W. Canniff, M.D., M.C.S., on "Pioneer Medical men of Upper Canada." The paper gave many interesting

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details of the modes of licence, examination and practice in the early days of this province.

Dec. 17th, 1891.—Mr. D. Boyle presented a paper on "The Discovery of the Great Falls of Labrador." This was opportune, as the newspapers of New York were claiming for a Bowdoin College expedition, the discovery of these falls, and the right of naming them. The discovery was made in 1839, by the late John McLean of the Hudson's Bay Company's service. The paper was recommended for publication in the "Transactions" and the Section is pleased to see it has been published in the number just issued. A very interesting paper was read at the same meeting by Mr. J. G. Ridout, "Gibraltar, with Illustrations." At this meeting, too, a resolution was passed and forwarded to the Council to call attention to the importance, as formerly urged by the Institute, of setting apart several townships on the head waters of some of our northern rivers as a national park. The Section is pleased to note that a Royal Commission has been appointed by the Lieut.-Governor in Council to fully consider this subject, for, in addition to its value to natural history, forestry, pisciculture and the preservation of many animals and birds from possible extinction, the establishment of natural parks will conduce to the fostering of a patriotic spirit and be a means of increasing interest in Canada abroad.

Feb. 21st, 1892.—At this largely attended meeting Mr. Arthur Harvey read a treatise on "The Labarum of Constantine the Great, and the new views thereon of Mr. Christopher Samarsidis, Gymnasiarch (Principal of the Collegiate Institute), of Adrianople, Turkey." Mr. Samarsidis had traced in the arcs and crosses of a parhelion, as in a monogram, the very letters of the celebrated *TOYTΩ NIKA*, and the emblems *XP*. The paper dealt with this subject and was illustrated by diagrams of parhelia (frequent in Canada) and other atmospheric phenomena which may have had some connection with the vision of Constantine. The feeling formerly, and even yet, excited by such displays was alluded to, with quotations, also the circumstances which led to the decay and fall of Polytheism, and the adoption of Christianity as the religion of the Roman Empire. One of the objects of the paper was to show "how rapidly a ripple on the shores of the blue Ægean now reaches our Canadian lakes."

March 24th, 1892.—A paper by Mr. Jas. Bain, Jr., on "The Rebellion of 1837-8, as seen by an English officer," gave an account by Lieut. Hutton, 34th Regt., of his travels with the troops and the part they took in repelling the American sympathisers of that day. The action at Sandwich in which Col. Prince commanded the Canadian militia was described in apparently impartial terms. The paper elicited a warm

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discussion, and it became evident that the time has hardly arrived yet for a dispassionate survey of the events of that period. It was stated by Mr. Bain that diaries and letters relating to these times exist in greater quantity than usually supposed, and it is to be hoped that their possessors will place them at the disposal of this section for copying, if not for the preservation of the originals.

April 21st, 1892.—The last paper of the Session was read by Mr. J. C. Hamilton, LL.B., "Afro-Canadian—Retrospect and Prospect," being the conclusion of his exhaustive work on the colored race in Canada, of which several prior chapters have been communicated to the Institute or to the Section. We hope soon to see the completed volume in print, and trust it will be as acceptable to the general public as it has been interesting to the members.

The officers of the Section, elected for the ensuing year, are:—*Chairman*, J. C. Hamilton, M.A., LL.B.; *Secretary*, O. A. Howland; *Council*, J. G. Ridout, Robt. Jenkins, Geo. M. Rae.

ARTHUR HARVEY,

Secretary.

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PROCEEDINGS OF THE ORNITHOLOGICAL SUB-SECTION OF THE BIOLOGICAL SECTION OF THE CANADIAN INSTITUTE.

EDITED BY THE EDITING COMMITTEE.

(Twenty-sixth meeting, April 15, 1890).

Arrivals.—*Totanus melanoleucus*, Greater Yellow-legs April 4, on the sand-bar, Ashbridge's bay. *Sayornis phoebe*, April 14, Phoebe on Don Flats. *Zonotrichia albicollis*, April 14, White-throated Sparrow in city. *Turdus aonalaschkæ pallasii*, Hermit Thrush, collected April 14, in the city.—JOHN EDMONDS.

Arrivals at Sharon, Ont.—*Melospiza fasciata*, Song Sparrow first seen April 3, numerous on April 5, *Sialia sialis*, Bluebirds first seen flying high overhead on April 3; April 4, they began to settle down and on April 5, were quite common about every fence and stump. *Sturnella magna*, First Meadow Larks seen on April 3, common on April 5. *Sayornis phœbe*, Phœbe, observed on April 5, quite common on April 7. *Passerella iliaca*, Toronto.—On April 13, I observed a small flock of Fox Sparrows in the Queen's Park. *Sphyrapicus varius.* On April 13, I watched a female Yellow-bellied Sapsucker in the Queen's Park, sucking sap from holes she had pierced in the bark of a maple tree. Having sucked the sap from the holes already made she began pecking another hole and by the time it was finished the old ones were filled again, and she would return and empty them. A slight disturbance would cause her to fly away a short distance but she soon returned to enjoy her favorite drink. Examining the ground at the root of the tree I found pieces of bark, cut from the holes, scattered around.—C. E. PEARSON.

Otocoris alpestris praticola.—On April 4, I collected a pair of Shore Larks on the Island. The female had been sitting on eggs.—J. A. VARLEY.

Tachycineta bicolor.—On April 4, I observed the first Tree Swallows on the Island and on April 5, I saw about a dozen at Balmy Beach.

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Spizella monticola, Tree Sparrows, were first observed on April 4, and Savannah Sparrows, *Ammodramus sandwichensis savanna*, were seen on April 12, at the Woodbine Race Course.—J. B. WILLIAMS.

Arrivals.—April 7, Piping Plover, *Ægialitis meloda*. April 4, White-rumped Shrike, *Lanius ludovicianus excubitorides*. April 7, Blue Heron, *Ardea herodias*.—W. CROSS.

Arrivals.—At Ayr, Ont., 1890, Feburary 2, *Acanthis linaria*, Redpoll *Cyanocitta cristata*, Blue Jays have been seen here regularly since March 1. March 15, *Merula migratoria*, Robin. March 16, *Melospiza fasciata*, Song Sparrow. *Molothrus ater*, Cow-bird. March 24, *Sturnella magna*, Meadow Lark. *Sialia sialis*, Blue-bird, May 7, *Icterus galbula*, Baltimore Oriole.—W. PARKS, AYR.

(Twenty-seventh meeting, April 29, 1890.)

Arrivals.—March 25, Blue-birds, *Sialia sialis*, Robins, *Merula migratoria*, Field Sparrows, *Spizella pusilla*, were seen at Georgetown. March 31, *Otocoris alpestris praticola*, Shore Larks, *Falco sparverius*, common at Georgetown; a scattering of snow on ground. March 31, *Merula migratoria*, *Sialia sialis*, *Melospiza fasciata*, first seen at Lamaroux, Scarboro Township. The ground was covered with snow, and deep drifts in many places. April 2, *Merula migratoria*, *Spizella fasciata*, common at Toronto. April 5, Bronzed Grackles *Quiscalus quiscula æneus*, were first seen at Toronto.—WM. BRODIE.

March 26.—To-day I saw the first Bronzed Grackles *Quiscalus quiscula æneus*, on Bathurst St. March 30, I saw a flock of geese, flying high in the air, towards the North. April 4, Observed first Phœbe, *Sayornis phœbe*, Golden-crowned Kinglet, *Regulus satrapa*, and Tree Swallow, *Tachycineta bicolor*. April 4, Saw first Ruby-crowned Kinglet, *Regulus calendula*, Brown Creeper, *Certhia familiaris americana*, Field Sparrow, *Spizella pusilla*, Tree Sparrow, *Spizella monticola*, Cowbird, *Molothrus ater*, Hairy Woodpecker, *Dryobates villosus*, Bank Swallow, *Clivicola riparia*, and secured one Meadow Lark, *Sturnella magna*. April 5, secured the first Vesper Sparrow, *Poocætes gramineus*, Chipping Sparrow, *Spizella socialis*, Savannah Sparrow, *Ammodramus sandwichensis savanna*. April 6 and 7, no Tree Swallows, *Tachycineta bicolor*, were to be seen around the city, weather being colder. April 8, Tree Swallows returned. April 8, saw first Purple Martin, *Progne subis*, Barn Swallow, *Chelidon erythrogaster*, and Yellow-bellied Sapsucker,

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Sphyrapicus varius. April 11, I counted twenty three Flickers, *Colaptes auratus*, on the University Lawn. April 12, saw first Baltimore Oriole, *Icterus galbula.* April 13, *Zonotrichia leucophrys*, White-crowned Sparrow, *Zonotrichia albicollis*, White-throated Sparrow, *Pipilo erythrophthalmus*, Towhee, *Turdus aonalaschkæ pallasii*, Hermit Thrush, *Turdus swainsonii*, Olive-backed Thrush, *Turdus fuscescens*, Wilson's Thrush. *Passerella iliaca in flocks.*—To-day, April 13, I saw a flock of about forty of the above birds in the University Ravine; but they were so shy I could only secure one specimen. This is the first record, of a flock of Fox Sparrows, in Toronto, and the first record of any being taken in the spring. They were feeding on the ground, and could be seen scratching among the leaves on the side of the ravine, and on being disturbed, they flew up among the bushes, and were off before a shot could be secured. I also saw another flock on Well's Hill, and secured two specimens on April 14. They were surrounded by a guard of Juncos, *Junco hyemalis*, and were very hard to approach, as the Juncos flying up startled them, and they were off immediately. April 15, Saw two specimens of *Carpodacus purpureus*, Purple Finches, and two *Loxia leucoptera*, White-winged Crossbills, in the University Grounds; also saw first *Dendroica coronata*, Myrtle Warbler, and first *Troglodytes ædon*, House Wren.—G. E. ATKINSON.

Acanthis linaria rostrata, at Toronto.—Among a number of Redpolls sent to Washington for determination by Mr. Ridgeway, is a young male, taken at Toronto by Mr. Cross, on February 10, 1890, and an adult female taken at Lorne Park, November 9, 1889, which were pronounced the Greater Redpoll.

Acanthis linaria holbœllii, at Lorne Park.—Three specimens, one male taken March 3, and a male and female March 15, 1888. were determined Holbœll's Redpoll, but they are not typical of the form but nearer to that than to *linaria.*

Otocoris alpestris praticola, notes from Ottawa.—On the level plain that extends three miles north of this city, I saw, on March 23, seven solitary Shore Larks, and one pair, and on the open plain of Quinnville I saw another pair; although the weather is cold, and the snow is still deep; they seem to be mated and settled for the season, On the experimental farm I secured a male, on March 25, and was told by Mr. Fletcher, that several pairs breed each year, on the high dry knolls of the farm, and raise two broods each season.—ERNEST E. THOMPSON.

Arrivals.—On Sept 23, T. Harmer, secured the first Spotted Sandpiper, *Actitis macularia*, also Tree Swallow, *Tachycineta bicolor*, Cliff

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Swallow, *Petrochelidon lunifrons*, and Bank Swallow, *Clivicola riparia*. April 24,—Swamp Sparrow, *Melospiza georgiana*, Sora Rail, *Porzana carolina*. April 27.—Black and White Warbler, *Mniotilta varia*, Black-throated Green Warbler, *Dendroica virens*. April 28, This morning I secured a fine Meadow Lark, *Sturnella magna*, in a thick hardwood bush in Rosedale.—JAMES R. THURSTON.

Port Sydney Observations for 1888, and 1889.—The following rare birds have been observed by me at the above place in 1888, April 7, Three-toed Woodpecker, *Picoides arcticus*, Fox Sparrow, *Passerella iliaca*, on May 1, I shot a fine specimen of the latter species. May 3, secured a pair of Pileated Woodpeckers, *Ceophlœus pileatus*, May 16, Traill's Flycatcher, *Empidonax pusillus traillii*, this species seems to be abundant, as I have since observed a large number, several of which I secured. May 19, Virginia Rail, *Rallus virginianus*, Solitary Sandpiper, *Totanus solitarius*. June 14, Olive-sided Flycatcher, *Contopus borealis*.

March 15, 1889.—Pair of Canada Jays, *Perisoreus canadensis*. March 19, Pine Siskin, *Spinus pinus*, March 22, another pair of *Perisoreus canadensis*.

Gravenhurst Observations 1889.—May 25, Catbird, *Galeoscoptes carolinensis*, May 28, House Wren, *Troglodytes aedon*, caught on nest which contained six eggs. September 9, Sora Rail, *Porzana carolina*, found dead on R. R. track; Least Bittern, *Botaurus exilis*.

1890.—Jan 4, Robin, *Merula migratoria;* January 17, Male Evening Grosbeak, *Coccothraustes vespertina;* January 19, two Pine Grosbeaks, *Pinicola enucleator;* January 8, full plumaged Goshawk, *Accipiter atricapillus*, January 29, Robin; March 11, to 28, secured specimens of Shore Lark, *Otocoris alpestris;* March 12, two Pine Grosbeaks, *Pinicola enucleator;* March 28, three male Snow Buntings, *Plectrophenax nivalis*. —WM. MELVILLE.

Corvus americana nesting.—On April 16, I found a Crow's nest in the University Grounds. It contained five fresh eggs. This nest was in the top of a pine tree; on the same day I got another containing four eggs, out of a beech tree at Greenwood's Crossing.

Migrants.—White-throated Sparrows, *Zonotrichia albicollis;* Hermit Thrushes, *Turdus aonalaschkæ pallasii* and other northern birds have been very numerous around the Queen's Park since April 22, migration is evidently in full swing.—CHAS E. PEARSON.

Passerella iliaca.—On April 18, at the University Grounds I saw several of the above rare Sparrows, I also saw several more travelling with Juncos on Well's Hill on the same day and also from April 20 to April 23.

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Merula migratoria, nesting, On April 22 I found two nests of the robin nearly completed.—HUBERT H. BROWN.

Ægialitis vocifera arrived.—On April 20, I saw first of the above plover at Leslie's Nurseries, East Toronto. On same day I saw a Fox Sparrow (*Passerella iliaca*), in Rosedale.—JOHN. EDMONDS.

The following list of birds are mentioned as occurring at Listowel, County Perth, by W. L. KELLS.

Podilymbus podiceps.—Mentioned as taken occasionally on the river.

Aix sponsa.—A Pair of Wood Ducks nested near there for several successive years, some of the young were captured.

Botaurus lentiginosus.—Casual visitor.

Botaurus exilis.—Casual visitor supposed to breed.

Ardea herodias.—A common visitor to the creeks and ponds in the neighbourhood.

Ardea virescens.—One specimen of the Green Heron captured in 1889.

Nycticorax nycticorax nævius.—One specimen taken from a flock of five in 1887.

Rallus virginianus.—Occasionally breeds.

Porzana carolina.—A summer resident, several nests taken.

Philohela minor.—A rare summer resident.

Gallinago delicata.—A fall migrant.

Tringa minutilla.—Generally seen as a fall migrant.

Totanus melanoleucus.—A few seen in the spring of 1889.

Totanus flavipes.—Sometimes seen in the fall.

Totanus solitarius.—Common about ponds and marshy places, have observed it till the first week in June, then not till after the middle of July, when it remains till the end of August.

Actitis macularia.—Common on the banks of streams and ponds, breeds.

Charadrius dominicus.—A fall migrant.

Ægialitis vocifera.—A common summer resident appearing in March, breeds.

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Colinus virginianus.—Very rare in this locality now, not observed breeding for many years.

Bonasa umbellus.—A few resident in the locality.

Ectopistes migratorius.—Becoming rare, a flock of eleven seen June 10, 1885, only odd ones seen since.

Zenaidura macroura.—One procured in 1889, may become more common.

Accipiter velox.—Not common, one nest of four eggs taken May 24, 1882.

Accipiter cooperi.—Rather common, appearing about the first of April; the most destructive of our hawks to young poultry, pigeons, and wild birds.

Buteo borealis.—Fairly common in summer, arrives about the middle of March, may breed.

Buteo lineatus.—Common, arriving about March 21, breeds here.

Buteo latissimus.—Common, may breed.

Archibuteo lagopus sancti-johannis.—Captured one specimen in a trap, rare.

Falco columbarius.—Occasionally observed.

Falco sparverius.—Common, nests in holes in trees mostly those of Woodpeckers.

Asio wilsonianus.—A few have been taken here.

Asio accipitrinus.—Have seen several specimens in local collections.

Syrnium nebulosum.—Commonly met with in spring, may breed.

Scotiaptex cinerea.—A few observed, mostly in winter.

Nyctala acadica.—Rather rare, may possibly breed.

Megascops asio.—Common in winter.

Bubo virginianus.—Occasionally met with in dense woods, doubtless breeds.

Nyctea nyctea.—A rare winter visitor.

Coccyzus americanus.—Rare, one nest of two eggs taken July 20, 1884.

Coccyzus erythrophthalmus.—A common summer resident, breeds.

Ceryle alcyon.—A common resident, nests in self-made burrows.

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Dryobates villosus.—A common resident, breeds here.

Dryobates pubescens.—Occasionally observed at all times of the year.

Picoides arcticus.—A pair frequented my farm from the fall of 1888 to spring of 1889, one captured at Elma, in June.

Sphyrapicus varius.—A common summer resident, breeds, arrival and departure uncertain.

Ceophlœus pileatus.—Very rare, once more common.

Melanerpes erythrocephalus. — A common summer resident, breeding on the margins of the woods.

Colaptes auratus.—A common summer resident from the end of March to middle of October, breeds here.

Antrostomus vociferus.—Common from May to October, breeds here.

Chordeiles virginianus.—A common summer resident, breeds.

Chætura pelagica.—An abundant summer resident, breeding in outhouses, chimneys, and hollow trees.

Trochilus colubris.—A common summer resident, probably nests

Tyrannus tyrannus.—Common from middle of May to September.

Myiarchus crinitus.—Heard mostly in May and June.

Sayornis phœbe.—Common from first of April, to middle of October, mostly about water, breeds.

Empidonax pusillus traillii.—Common in certain woods, several nests seen.

Empidonax minimus.—Common, breeds.

Cyanocitta cristata.—A resident, sometimes seen in large flocks, a few breed.

Corvus corax sinuatus.—Two pair have been observed.

Corvus americanus.—Very common from middle of February to November, specimens have also been seen in other winter months, breeds.

Dolichonyx oryzivorus. — Bob-o-link, common summer resident, breeds.

Molothrus ater.—Cow-bird, common summer resident, generally seen in flocks.

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Agelaius phœniceus. — Red-winged Black-bird, common, arrives about March 20, last seen in middle of October.

Sturnella magna.—Meadow Lark, common summer resident, breeds.

Icterus galbula.—Baltimore Oriole, a summer resident in town and country, breeds.

Scolecophagus carolinus. — Rusty Grackle, migratory visitor' formerly nested.

Quiscalus quiscula æneus.—Crow Blackbird, abundant summer resident, breeds.

Coccothraustes vespertina.—Evening Grosbeak, a rare winter visitor, one seen December 12, 1889, two flocks previously seen, data not taken.

Pinicola enucleator.—Pine Grosbeak, specimens seen nearly every winter, abundant in the winter of 1884.

Carpodacus purpureus.—Purple Finch, common summer resident, nests in Balsam plantations.

Loxia leucoptera.—White-winged Crossbill, occasionally collected.

Loxia curvirostra minor.—Red Crossbill, flocks seen every winter, nest taken.

Acanthis hornemannii exilipes—Hoary Redpoll, one pair collected March 15, 1890.

Acanthis linaria.—Redpoll common in large flocks every winter.

Spinus tristis.—Goldfinch, abundant summer resident, sometimes seen in winter, nests.

Spinus pinus.—Pine Siskin, common winter visitor, observed from December to April.

Plectrophenax nivalis.—Snowbunting, observed in large flocks, from November to end of March.

Calcarius lapponicus.—Lapland Longspur, a rare winter visitor.

Poocætes gramineus.—Vesper Sparrow, common from middle of April to October, breeds.

Ammodramus sandwichensis savanna. — Savanna Sparrow, common in meadow and pasture fields, breeds.

Zonotrichia leucophrys.—White-crowned Sparrow, common from middle of April to middle of May, not noticed in the fall.

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Zonotrichia albicollis.—White-throated Sparrow, common summer resident, breeds.

Spizella monticola.—Tree Sparrow, migratory visitor.

Spizella socialis.—Chipping Sparrow, common summer resident, breeds.

Junco hyemalis.—Black Snowbird, common resident, breeds, seen sparingly in winter.

Melospiza fasciata.—Song Sparrow, abundant, breeds.

Melospiza georgiana.—Swamp Sparrow, occasionally seen.

Passerella iliaca.—Fox Sparrow, rare migrant.

Pipilo erythrophthalmus.—Towhee, becoming more common, may breed.

Habia ludoviciana.—Rose-breasted Grosbeak, common especially in low thick hardwoods, nests.

Passerina cyanea.—Indigo Bunting, common on the margins of second growth woods, nests.

Piranga rubra.—Summer Tanager, a few specimens seen.

Piranga erythromelas.—Scarlet Tanager, not common, a few nests seen.

Progne subis.—Purple Martin, a common summer resident, in the Town.

Petrochelidon lunifrons.—Cliff Swallow, common, nests in colonies.

Chelidon erythrogaster.—Barn Swallow, abundant summer resident breeds.

Tachycineta bicolor.—Tree Swallow, a common summer resident, nests in Town and country.

Ampelis garrulus.—Bohemian Waxwing, occasionally observed in winter, sometimes in large flocks in spring.

Ampelis cedrorum.—Cedar Wax-wing, common from end of May to middle of August, nests.

Lanius borealis. — Northern Shrike, observed singly in winter, sometimes in flocks, from two to six, carries its prey in claws and beak.

Lanius ludovicianus excubitorides. — White-rumped Shrike, observed from early in April to last of October, local in distribution, nests in thorn trees.

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Vireo olivaceus.—Red-eyed Vireo, common, breeds.

Vireo gilvus.—Warbling Vireo, not common, heard in Orchards and deep woods.

Vireo flavifrons.—Yellow-throated Vireo, summer resident.

Vireo noveboracensis.—White-eyed Vireo, one collected in middle of October 1890.

Mniotilta varia.—Black and White Warbler, common, several nests seen.

Helminthophila chrysoptera.—Golden-winged Warbler, generally observed in early summer, one nest taken.

Helminthophila ruficapilla.—Nashville Warbler, rarely seen in spring, may breed.

Compsothlypis americana.—Parula Warbler, a few noticed.

Dendroica æstiva.—Yellow Warbler, common, breeds.

Dendroica cærulescens.—Black-throated Blue Warbler, common in several high woods, several nests seen.

Dendroica coronata.—Myrtle Warbler, occasionally met with in certain damp woods, one nest taken.

Dendroica cærulea.—Cærulean Warbler, generally noticed in summer, may nest.

Dendroica pensylvanica.—Chestnut-sided Warbler, common in low second growth hardwood, nests.

Dendroica castanea.—Bay-brested Warbler, casually noticed, one nest taken.

Dendroica striata.—Blackpoll Warbler, occasionally observed in spring and early summer, also in August, may breed.

Dendroica blackburniæ.—Blackburnian Warbler, a spring visitor.

Dendroica vigorsii.—Pine-creeping Warbler, a few specimens observed

Seiurus aurocapillus.—Oven-bird, common summer resident, breeds.

Seiurus noveboracensis.—Water Thrush, common in low swampy woods, heard from first of May to last of August, breeds.

Geothlypis agilis.—Connecticut Warbler, an occasional resident on the margin of certain low woods, several nests taken.

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Geothlypis philadelphia.—Mourning Warbler, occasional resident, one nest taken.

Geothlypis trichas.—Maryland Yellow-throat, a summer resident becoming more common, no nest yet taken.

Sylvania canadensis.—Canada Warbler, met with in certain low swampy woods, several nests taken, last in June 5, 1888.

Setophaga ruticilla.—American Redstart, abundant in all high hardwood, nests.

Anthus pensilvanicus. — Titlark, abundant spring and autumn visitor.

Galeoscoptes carolinensis. — Catbird, common summer resident breeds.

Harporhynchus rufus.—Brown Thrasher, seen for the first time in this vicinity, July 1889, may become more common and breed.

Troglodytes aëdon. — House Wren, common summer resident, breeding in town and country,

Troglodytes hiemalis.—Winter Wren, common in swampy woods, a number of nests observed.

Certhia familiaris americana.—Brown Creeper, common in swampy woods, several nests taken.

Sitta carolinensis. — White-bellied Nuthatch, common resident, breeds.

Sitta canadensis. — Red-bellied Nuthatch, occasionally observed, more common in evergreen woods in winter than in summer.

Parus atricapillus.—Chicadee, common resident, breeds.

Regulus satrapa.—Golden-crowned Kinglet, a common winter resident.

Regulus calendula.—Ruby-crowned Kinglet, uncommon spring visitor, not observed in autumn.

Polioptila cærulea.—Blue-gray Gnatcatcher, occasionally observed in spring, may breed.

Turdus mustelinus.—Wood Thrush, a common summer resident, breeds.

Turdus fuscescens.—Wilson's Thrush, not so common as the Hermit Thrush, breeds.

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Turdus ustulatus swainsonii.—Olive-backed Thrush, a rare spring visitor.

Turdus aonalaschkæ pallasii.—Hermit Thrush, common, breeds.

Merula migratoria.—Robin, abundant summer resident, breeds.

Sialia sialis.—Blue-bird, abundant summer resident, breeding in town and country.—W. L. KELLS.

More Passerella iliaca.—On April 17, I shot another Fox Sparrow on Well's Hill, and on April 19, I secured one in University grounds out of the flock mentioned before. It is remarkable that these birds, which have seldom been seen in Toronto in the spring, and only as stragglers in the fall, should come in such numbers this year, and at such an unusal time.

Antrostomus vociferus.—On April 19, I secured the first specimen of the Whip-poor-will, and first Pine Warbler, *Dendroica vigorsii*, on Well's Hill; and on April 29, I saw five Chimney Swifts, *Chætura pelagica*, sailing around the ruins of the University. Migration has seemingly lulled for a while, and the arrivals have departed for the north, leaving our woods ready for another consignment.—G. E. ATKINSON.

After the reports were taken an Editing Committee composed of Dr. Brodie, J. R. Thurston, H. H. Brown, and G. E. Atkinson was appointed to look after the editing of the proceedings.

(Twenty-eighth Meeting, May 13.)

Seiurus aurocapillus on Yonge Street.—On May 9, I was handed a fine Oven-bird, which was secured by a boy in a lane on the south-east corner of King and Yonge Streets.—J. A. VARLEY.

Megascops asio.—On April 27, I found a nest of the Screech Owl about five miles east of Victoria Park. It was in a hollow stump about seven feet from the ground and the cavity was eight or nine inches deep, lined with a few feathers and contained five fresh eggs.

Arrivals.—On May 4, I observed the first Brown Thrasher, *Harporhynchus rufus*, Cat-bird, *Galeoscoptes carolinensis*, and Oven-birds, *Seiurus aurocapillus*, in Rosedale.—JOHN L. JACKSON.

Arrivals.—May 3, Ruby-throated Humming Bird, *Trochilus Colubris*, Virginia Rail, *Rallus virginianus*. May 4, Florida Gallinule,

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Gallinula galeata. May 6, Least Bittern, *Botaurus exilis.* May 8, Long billed Marsh Wren, *Cistothorus palustris.* May 10, American Pipit *Anthus pensilvanicus.*—JOHN EDMONDS.

Arrivals.—May 3, Black-throated Blue Warbler, *Dendroica cærulescens*, Parula Warbler, *Compsothlypis americana.*

Sparrows eating buds.—On May 13, I saw a flock of about fifty White-throated Sparrows, *Zonotrichia albicollis*, and White-crowned Sparrows, *Zonotrichia leucophrys*, eating the buds of a maple tree, in the University Grounds.

Sialia sialis nesting.—On May 3, I found a nest of the Blue-bird in the Cricket Grounds. It had contained eggs but they were taken.

Albino Spizella socialis.—On May 9, I secured a bird which I had noticed around the University Grounds since May 1, but had been unable to secure it. It seemed a new bird in appearance, but its song resembled that of the Chipping Sparrow, and upon examination it proved to be an albino of the above species.—CHAS. E. PEARSON.

April 30.—I received three Caspian Terns, *Sterna tschegrava*, which were killed out of a flock of about fifty, they were all females.

Green Heron.—A fine specimen of *Ardea virescens*, was shot in Toronto Marsh and brought to me on April 30.

May 8.—I received another Caspian Tern, which was also a female.

Chicadees nesting.—On May 12, while at the Humber, I found three pair of the above *Parus atricapillus*, busy preparing their nests. One stump containing a nest had three or four holes started and left evidently proving too hard for the little workers. The same day I saw a pair of Mourning Warblers, *Geothlypis philadelphia.*

Ectopistes migratorius, at Humber.—On May 12, at the Humber I heard a cooing in the distance and following it up I came across a beautiful male Passenger Pigeon, and got within easy range but unfortunately had only a charge of small shot which failed to bring down the prize.

Nests found.—On the same day I saw Kingfishers, *Ceryle alcyon*, building, and found nest of Song Sparrow, *Melospiza fasciata*, containing four eggs.

May 2.—I received the first Scarlet Tanager *Piranga erythromelas.* —WM. CROSS.

Arrivals and collections.—April 30, I saw the first Brown Thrashers, *Harporhynchus rufus*, in the University Grounds. May 2, saw the first

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Yellow Warbler, *Dendroica æstiva*. May 3, secured two males and one female Red Crossbill, *Loxia curvirostra minor*, at the same place. May 4, saw first Crested Flycatcher, *Myiarchus crinitus*, on Well's Hill.

Sparrows eating beech buds.—May 5, I watched a flock of *Passer domesticus*, eating beech buds in the University Grounds. They go in flocks of about 20, from tree to tree and destroy the buds at the rate of about 5 per minute for each bird. They cut the buds off close to the twig, eat the soft pip and drop the shells. On May 11, I also saw three Rose-breasted Grosbeaks feeding at the same place and in the same manner, occasionally darting out at a passing insect. I managed to secure one and its stomach was packed with these buds.

More arrivals.—May 6, Oven-bird, *Seiurus aurocapillus*. May 10, Rosebreasted Grosbeak, *Habia ludoviciana*, Blueheaded Vireo, *Vireo solitarius*. May 13, Bob-o-link, *Dolichonyx oryzivorus*, Catbird, *Galeoscoptes carolinensis*.—G. E. ATKINSON.

Twenty-ninth meeting, May 27, 1890),

Arrivals.—May 19, *Tyrannus tyrannus*, Kingbird. *Sylvania pusilla*. Wilson's Warbler. *Sylvania canadensis*, Canadian Warbler.

Observations and collections, at Orillia, Ont.—I secured three Baltimore Orioles, *Icterus galbula*, and several Warblers on May 24. May 25, secured a male Maryland Yellow-throat, *Goethlypis trichas*.

Nests.—May 26, at Orillia, I found a nest of *Quiscalus quiscula æneus*, Bronzed Grackles, containing four full fledged young birds. One nest of Chipping Sparrow, *Spizella socialis*, containing two eggs, and one nest of the Barn Swallow, *Chelidon erythrogaster*, containing four eggs —G. E. ATKINSON.

Migration at its height.—On May 3, in Rosedale, I saw large numbers of Warblers, among them were the Chestnut-sided, *Dendroica pensylvanica*, Blackburnian, *Dendroica blackburniæ*, and one Cerulean Warbler, *Dendroica cærulea*. May 24, a Mourning Dove, *Zenaidura macroura*, was secured at Little York, also three Baybreasted, *Dendroica castanea*, one Cerulean Warbler, *Dendroica cærulea*, and one Cape May Warbler, *Dendroica tigrina*, were brought to me. I also secured several specimens of the Ruby-throated Hummingbird, *Trochilus colubris*, which are very numerous this season; a male specimen of

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Ardea virescens, Green Heron, was shot at the Humber and brought to me on May 24.

A new species for Ontario.—On May 18, a very interesting capture was made on Toronto Island, and I afterwards received the bird; it was a small Bittern with all the colorings very dark and blended into rich chestnut brown on the back. It was so unlike the Least Bittern that I put it down as a new bird and soon identified it as *Botaurus neoxenus*, Cory's Least Bittern. It is a resident of Florida and Mexico, and is supposed to have wandered up here with our *Botaurus exilis*, during migration.—W. CROSS.

(Thirtieth Meeting, June 3).

Another rare species.—On May 23, a Gull was brought to my store. It had been shot on Toronto Island and being unlike any of our native species I had it thoroughly examined and it proved to be a male Laughing Gull, *Larus atricilla*. This is, I believe, the first record of this bird for Ontario.

Other rare birds.—June 2, I received a female Wilson's Phalarope *Phalaropus tricolor*, in full breeding plumage shot at Toronto Marsh. Also one Black Tern, *Hydrochelidon nigra surinamensis*, and on May 28, one Caspian Tern, *Sterna tschegrava*, and one Yellow-billed Cuckoo, *Coccyzus americanus*.—WM. CROSS.

Coccyzus erythrophthalmus.—The first Black-billed Cuckoo was secured on Well's Hill on May 28.

Mature Accipiter atricapillus.—On June 2, on Well's Hill I heard crows raising a disturbance and on investigating I saw a large Hawk fly to the top of a tree near by. I at once identified it as an adult Goshawk. I fired but the charge was too light and I did not secure him.—G. E. ATKINSON.

Passerina cyanea.—On June 3, I saw the first Indigo Bunting at Kew Gardens.—J. A. VARLEY.

(Thirty-first meeting, June 17).

Seiurus motacilla, at the Credit.—On August 23, 1888, I collected a young female of the Large-billed Water Thrush, on the Credit River, about five miles north of Lake Ontario. This I believe is the most

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northern record for the species in Ontario. Its dimensions are :—length 5.88 ; extent, 10 ; wing, 3.19 ; tail, 2.06 ; beak, .51. It was in fair condition, and had been feeding on grasshoppers and coleoptera.—ERNEST E. THOMPSON.

Arrivals &c.—On May 21, at Well's Hill I shot an adult female Broad-winged Hawk, *Buteo latissimus*, and secured the first Baybreasted Warbler, *Dendroica castanea*, and a Yellow-bellied Flycatcher *Empidonax flaviventris*.—H. H. BROWN.

Albino Passer domesticus.—Since June 10, I have observed a sparrow, which is completely white, in company with others of its species, around the Woodbine Race Track, but as yet have not secured it.—JAS A. VARLEY.

June 7.—I received a Marbled Godwit *Limosa fedoa*, and a Northern Phalarope, *Phalaropus lobatus*, one specimen of Black Tern, *Hydrochelidon nigra surinamensis*, and on June 14, a full plumaged Night Heron, *Nycticorax nycticorax nævius*, and White-rumped Sandpiper, *Tringa fuscicollis*, all collected on Ashbridge's Bar.—W. CROSS.

Towhee's nest.—On May 25, I found a nest of *Pipilo erythrophthalmus*, in Rosedale. It contained four fresh eggs and was constructed of grape-vine bark lined with coarse grass.

Coccyzus americanus, in Union Station.—On May 29, I was given a female Yellow-billed Cuckoo, which was caught about 4 a.m. while roosting in the Union Station ; and on May 30, I received a Virginia Rail *Rallus virginianus*, caught in the same place where they had evidently gone to roost.

Nests found.—On May 31, I found a nest of the Savannah Sparrow *Ammodramus sandwichensis savanna*, containing four eggs ; two of the Sora, *Porzana carolina*, one containing six, and the other two eggs, also several nests of Red-winged Blackbirds, *Agelaius phœniceus*, some with eggs and some with young in. June 4, one nest of Spotted Sandpiper, *Actitis macularia*, containing four fresh eggs. June 7, several nests of Bank Swallow, *Chelidon erythrogaster*, with eggs at different stages of incubation, and several nests of Purple Martin, *Progne subis*, and Tree Swallow, *Tachycineta bicolor*. These two latter seem to have two nests containing eggs at the same time, as the boxes examined contained two nests and eggs each, while only one pair of each of the birds were observed.

Trochilus colubris nest.—While collecting east of Toronto on June 7, I was attracted by a Humming Bird which was flying around my head ;

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on following it I discovered its nest on the bough of a small cedar about ten feet from the ground. The mother came and sat on the eggs three times while I was watching it but I could not secure her. The nest contained two eggs which were partly incubated.

Carpodacus purpureus.—On June 14, I approached a pair of Purple Finches in the Queen's Park. I managed to get close enough to strike one of them with a stick, and captured it.—CHAS E. PEARSON.

Bonasa nest in Rosedale.—On June 9, I found a nest of the Ruffed Grouse, *Bonasa umbellus togata*, in Rosedale. It contained fifteen eggs, all but three of which had been hatched and the young gone. The shells of each egg had been cut around the large end and the young let out, and the large end turned inside the remainder of the shell, so that every shell was quite complete, two of the remaining three were bad and the third contained a dead bird. The nest was in a small depression on the side of a ravine. The same day I found a nest of Wilson's Thrush, *Turdus fuscescens*, containing three of its own eggs, and one of the Cowbird *Molothrus ater*, at the same place.—G. E. ATKINSON.

Migration observations, from Port Sydney.—The following is a list of the dates on which the different birds arrived here last spring, and a comparison with the arrivals up to April 1890. *Acanthis linaria*, Redpoll arrived January 25, 1889, November 1, 1889, much earlier. *Otocoris alpestris praticola*, Shorelark, March 5, 1889, Feburary 27, 1890, much earlier. *Spizella monticola*, Tree Sparrow, March 11, 1889, April 7, 1890, later. *Junco hyemalis*, Junco, March 17, 1889, April 7, 1890, later. *Merula migratoria*, Robin, March 22, 1889, April 23, 1890, later. *Sialia sialis*, Blue-bird, March 22, 1889, April 25, 1890, later. *Larus argentatus*, Herring Gull, March 22, 1889, March 18, 1890, earlier. *Melospiza fasciata*, Song Sparrow, March 24, 1889, April 7, 1890, later. *Scolecophagus carolinus*, Rusty Grackle, April 1, 1889, April 9, 1890, later. *Quiscalus quiscula æneus*, Bronzed Grackle, April 9, 1889, April 9, 1890, same. *Sphyrapicus varius*, Yellow-bellied Sapsucker, April 11, 1889, April 12, 1890, later. *Colaptes auratus*, Flicker, April 11, 1889, April 12, 1890, later. *Spinus tristis*, American Goldfinch, April 11, 1889, April 10, 1890, earlier. *Sayornis phœbe*, Phoebe, April 11, 1889, April 14, 1890, later. *Accipiter velox*, Sharp-shinned Hawk, April, 16, 1889, April 12, 1890, earlier. *Falco sparverius*, Sparrow Hawk, April 16, 1889, April 12, 1890, earlier. *Contopus virens*, Wood Pewee, April 16, 1889, not yet come, later. *Poocætes gramineus*, Vesper Sparrow, April 16, 1889, April 11, 1890, earlier. *Ceryle alcyon*, Kingfisher, April 16, 1889, April 12, 1890, earlier. *Troglo-*

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dytes hiemalis, Winter Wren, April 4, 1889, April 9, 1890, later. *Turdus fuscescens* Wilson's Thrush, April 16, 1889, April 17, 1890, later. *Ardea herodias* Blue Heron, April 12, 1889, April 3, 1890, earlier. *Regulus calendula*, Ruby-crowned Kinglet, April 4, 1889, April 11, 1890, later. *Regulus satrapa*, Golden-crowned Kinglet, April 4, 1889, April 11, 1890, later. *Passerella iliaca*, Fox Sparrow, April 17, 1889, April 17, 1890, same. *Zonotrichia albicollis*, White-throated Sparrow, April 20, 1889, April 17, 1890, earlier. *Tachycineta bicolor*, Tree Swallow, April 17, 1889, April 17, 1890, Same. *Urinator imber*, Loon, April 20, 1889, April 20, 1890, Same. *Spizella socialis*, Chipping Sparrow, April 20, 1889, April 20, 1890, same. *Archibuteo lagopus sancti-johannis*, Rough-legged Hawk, April 22, 1889, April 22, 1890, same. *Botaurus lentiginosus*, American Bittern, April 24, 1889, April 24, 1890, same.

Northern migrants wintering.—The following birds came down from the north and remained with us *Nyctea nyctea*, Snowy Owl; *Perisoreus canadensis*, Canada Jay; *Picoides arcticus*, Arctic Woodpecker; *Pinicola enucleator*, Pine Grosbeak; *Acanthis linaria*, Redpoll.

Resident birds at Port Sydney.—The following birds are resident with us summer and winter, *Ceophlœus pileatus*, Pileated Woodpecker; *Dryobates villosus*, Hairy Woodpecker; *Dryobates pubescens*, Downy Woodpecker; *Sitta carolinensis*, White-breasted Nuthatch; *Sitta canadensis*, Red-breasted Nuthatch; *Carpodacus purpureus*, Purple Finch; *Spinus tristis*, Goldfinch; *Cyanocitta cristata*, Blue Jay; *Loxia curvirostra minor*, Red Crossbill; *Loxia leucoptera*, White-winged Crossbill; *Parus atricapillus*, Chickadee; *Bubo virginianus*, Great-horned Owl; *Syrnium nebulosum*, Barred Owl; *Megascops asio*, Mottled Owl; *Nyctala acadica*, Saw-whet Owl; *Scotiaptex cinerea*, Great Gray Owl; *Lophodytes culcullatus*, Hooded Merganser. Our rivers are very much cut up by rapids around which there is always open water which is frequented by this duck and a few other species, which always find plenty of food. During the coldest weather I have seen flocks of as many as twenty, sporting around among the ice as contented as in mid-summer.

Rare birds at Port Sydney.—Ten years ago the Red-headed Woodpecker, *Melanerpes erythrocephalus*, was a very rare bird here, but is now very numerous; within the last 27 years, the Meadow Lark, *Sturnella magna*, has introduced itself, is likewise becoming common, and it is only three years since the first Shore Lark, *Otocoris alpestris praticola*, appeared and has become common. The Cow-bird, *Molothrus ater*, has not reached us yet. Two years ago I collected a Baltimore Oriole,

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Icterus galbula, the only specimen ever collected here, and I also collected the only male and female Towhee *Pipilo erythrophthalmus*, ever taken here. On May 6, 1890, I collected a Black-throated Green Warbler, *Dendroica virens*, which are just becoming common.

Nesting of Sitta canadensis, and Parus atricapillus. — Last summer I found a nest of the Red-breasted Nuthatch, it was dug in a rotten stump about five feet from the ground, and contained young birds almost able to fly. Around the entrance to the nest was a ring of pine or balsam gum, and as I saw the young birds picking at it I inferred it was an insect trap. I also found three nests of the Chickadee, and each was lined with the hair of the *Lepus americana*.

Kingfisher nesting.—Last summer I saw two nests of the *Ceryle alcyon*, one containing seven eggs and the other six. In the first I caught the male and in the second the female, which goes to show that the male assists in the incubation.—A. KAY, Port Sydney, Muskoka.

Nesting of Ontario birds.—From a paper read before the Biological Section May 26.

Coccyzus erythrophthalmus.—In July 1885, I saw a Black-billed Cuckoo, fly off a Wood Pewee's nest, in an orchard on Bathurst Street; and in July 1886, I saw another come off a Yellow Warblers nest in the same orchard, I got both eggs. There is no doubt that it was the Black-billed Cuckoo, as I shot the bird which came off the Pewee's nest.

Dryobates pubescens.—I find a Downy Woodpecker's nest, every year in a dead tree about fifteen feet from the ground.

Colaptes auratus.—I have found the Flickers' nesting every year, but in May 1889, I found a nest which caused a great deal of interest. It contained three fresh eggs, and hearing of the strange habit of laying a fresh egg every morning whether disturbed or not, I took the three eggs and returned next day and got another, and the next day I got the fifth. I visited the nest regularly every morning, and always got an extra egg until I got twenty eggs out of the nest. This settled it, and she left, but I saw her at another tree near by a few days later; she was evidently preparing another nest, this time higher up. I got up and found this hole about a foot deeper than the first being about twenty or twenty-two inches deep, it was empty so I watched her to see if I would get another haul but not so. Although I saw her at the hole every day, and got up two or three times a week I could find nothing until one Sunday morning July 20, I saw her sitting beside the hole, and seemingly pecking at something inside. I frightened

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her off, and at the same time looked up at the hole, and saw five heads come out, and then two young birds fly out. I at once scrambled up the tree, and caught the last one by the feet, as he was going off. In the meantime my friend was engaged with one which fell in the creek. Taking a stick he shoved the bird to the opposite shore, and as he crossed, it scrambled across the sand, and then up a tree.

Chordeiles virginianus.—Nests found occasionally on flat-roofed houses.

Chætura pelagica.—Swifts' nests are taken nearly every year from chimneys, in Toronto.

Tyrannus tyrannus.—I have taken the Kingbird's nests occasionally from the tops of pines.

Myiarchus crinitus.—I have found two or three nests of the Crested Flycatcher, in holes in dead trees. In 1887 I found one nest in a tree about fifty feet from the ground, directly over a Higholders nest with whom the male bird used to fight for the only branch on the tree, and I may say he always came off victorious, and has nested in the same tree every summer since then.

Contopus virens.—I find the Wood Pewee's nests every season generally in an orchard, in the crotch of an apple tree.

Agelaius phœniceus.—The Red-wing Blackbird nests may be found quite plentifully around any marsh, and I have found several every year.

Sturnella magna.—Found one nest of Meadow Lark in 1886 on Well's Hill, and in 1888 I found one nest on Don Flats, and in 1889 one on Spadina Road.

Icterus galbula.—I found the nest of the Oriole in 1884 and 1886, on Bathurst Street, and in 1889 I found three near West Toronto. I find that this bird builds its nest with only one hole to enter, and after the eggs are laid she makes a second hole, and goes in one side, and off the other. I say this because I have found the nests with fresh eggs in, and they only had the one hole, while every old nest I have examined, and all those which contained young birds were either open altogether at the top, or had two holes.

Quiscalus quiscula æneus.—The Bronzed Grackle is not found in the woods surrounding the city, the only chance that remains to get them is in the private grounds in the city where they breed in large numbers every year.

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Spinus tristis.—The American Goldfinches breed every year in and about the city.

Poocætes gramineus.—Vesper Sparrows' nests are likewise quite common in the fields around the city.

Ammodramus sandwichensis savanna.—The Savannah Sparrow's nests are occasionally found, but not as common as the Vesper.

Spizella socialis.—Chipping Sparrows' nests very common all over, but the number is fast decreasing since the introduction of the *Passer domesticus.*

Melospiza fasciata.—The Song Sparrows' nests are the commonest of all our native birds' nests. While at Linwood, Ont., in May, 1889, I was standing by the gate on Sunday morning 5th, when I heard something flutter, and turning saw a bird come out of a hole in the gate post. On examining the nest I found one egg: being anxious to capture the bird alive, I watched the hole but she did not go back that day, and next day I looked and found two eggs, and on the third and fourth morning I found an extra egg; on the fifth morning I caught her just as she entered the nest, and about half an hour afterwards she laid the fifth egg in the cage During the four days of laying she had not sat on the eggs either day or night, and only for about half an hour each morning while laying. The same condition holds good among all the other birds I have observed, except one Catbird.

Towhee, *Pipilo erythrophthalmus.*—One nest found in a pile of brush on Well's Hill in 1888.

Indigo Bunting, *Passerina cyanea.*—Found occasionally in raspberry bushes.

Progne subis.—The Purple Martins breed around the high buildings on the main streets of the city, and are therefore hard to get.

Chelidon erythrogaster.—Barn Swallow found common every year.

Tachycineta bicolor.—Tree Swallows nest every year in the birdhouses around the city.

Petrochelidon lunifrons.—Cliff Swallows and *Clivicola riparia*, Bank Swallows are to be found in thousands in the high banks on the lake shore east and west of Toronto, and in July, 1888, I dug out one nest of the *Stelgidopteryx serripennis*, Rough Winged Swallow out of a nest which was among the others at Long Branch.

Ampelis cedrorum.—Find two or three every season in the orchards about the city.

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Vireo olivaceus.—The Red-eyed Vireo's nests are found occasionally but may be more common than supposed to be.

Dendroica æstiva.—The Yellow Warbler's nests are to be found everywhere, and every season, and are generally the depositary of the Cowbird.

Dendroica blackburniæ.—In 1885 I found one nest of the Blackburnian Warbler in a cedar tree north of Well's Hill. It was the only nest of this species I ever saw here. It resembled that of the *D. æstiva*, but a little smaller and shallower, it contained two eggs which were marked very much similar to those of the Yellow Warbler.

Seiurus aurocapillus.—Oven-bird found occasionally on Well's Hill.

Setophaga ruticilla.—Redstart nests are found occasionally in the deeper bushes north of the hill.

Galeoscoptes carolinensis.—I find the Catbird's nests every year, but in July 1885 I found a nest on the hill which contained one fully fledged bird, one fresh egg and one addled egg. I took the addled egg and the young bird, and returned in about two weeks and got another full fledged bird. This is the only case I have known of fresh eggs and young birds being found in the same nest around Toronto.

Harporhynchus rufus.—I have found two or three Thrasher's nests among the low scrub on the hill.

Troglodytes ædon.—House Wrens' nests can be found in almost every orchard or bit of bush around the city. They build in holes in the side of a house or in a tree.

Cistothorus palustris.—The Long-billed Marsh Wren's nests are abundant in Toronto Marsh every year.

Parus atricapillus.—Have found Chicadees' nests every year in old stumps.

Turdus fuscescens.—The nests of Wilson's Thrush are to be found every year quite common in the deep woods.

Merula migratoria.—The Robin's nest is about the most familiar to all collectors, and is by far the most plentiful both in and outside the city.

Sialia sialis.—I find about two Blue-birds' nests every year, generally in a hole in a tree or post, with a small hole just big enough to admit the

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bird, but, in 1889, I found one nest on Spadina Road in the stump of an apple tree, where the hole was about three inches broad and the nest was only about three inches below the level of the hole; it contained five eggs.—G. E. ATKINSON.

(Thirty-Second Meeting, Sept. 23, 1890.)

Haliæetus leucocephalus.—On Sept 15, I received a fine Bald Eagle from Pickering, Ontario. It was a very large specimen and had been seen repeatedly carrying away small lambs.

Buteo swainsoni.—A fine male specimen of the Swainson's Hawk was secured on the Don flats and brought to me on Sept. 5. This is the first specimen I ever received in the flesh and the first record of its occurrence about Toronto.—WM. CROSS.

Vireo solitarius.—On Sept. 17, I collected a specimen of the Blue-headed Vireo in Rosedale.—WM. METCALFE.

Albino Passer domesticus.—On June 21, I secured an entire albino English Sparrow at Kew Gardens, it was a female and had been setting. Its color was a dark cream on the breast and a few very light brown markings on the shoulders and back corresponding to the dark markings of the ordinary specimens and the wings and tail were all dirty white.

Aix sponsa. Buteo latissimus.—At Sparrow Lake, Muskoka, I found Wood Ducks and Broad-winged Hawks very numerous during August.—J. A. VARLEY.

Micropalama himantopus.—On July 28, I shot a fine Stilt Sandpiper on Ashbridge's Bar. This bird is considered very rare about Toronto.

Phalaropus tricolor.—On Sept. 15, while Mr. A. Bunker was watching for ducks off the Sandbar at the west end of the Island, a Wilson's Phalarope pitched among his decoys and was secured. This also is considered a rare capture in this vicinity.—T. HARMAR.

Summer Collections.—June 18th, *Calidris arenaria*, Sanderling, collected on Ashbridge's Bar; July 17, young Coot, *Fulica americana*, secured in the marsh.

Aythya affinis.—About July 21 there seemed to be an unusual migration of ducks and shore birds, several species of the former having

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been secured, and flocks of Sandpipers were noticed about their usual haunts, and then for about a month they almost disappeared and very few specimens were seen.

Larus philadelphia.—On August 4, while returning from Port Credit, I secured two Bonaparte's Gulls, out of a large flock that were standing on pieces of floating wood in Humber Bay.

August 20.—I received a large Ring-billed Gull, *Larus delawarensis*, and a Pectoral Sandpiper, *Tringa maculata*, shot on Ashbridge's Bar.

Nycticorax nycticorax nævius.—On August 27, I secured a Night Heron, on Ashbridge's Bar. It was a female in the young plumage, but had evidently been incubating from the appearance of the skin on the belly. On the same date, I. also secured a Marsh Hawk *Circus hudsonius*, at the same place.

On September 13.—I observed several of the Swallows, principally *Chelidon erythrogaster*, and *Tachycineta bicolor*, with a few specimens of *Clivicola riparia*, still frequenting the Bar. Mr. Loane informs me that the Swallows and Blackbirds do not migrate at night, and mentions that on several occasions while he was lying in the rushes, he saw them rise up just at daybreak, and circling round at a great height in the air, they would strike off in a straight line south; and in the spring he has seen immense flocks of these birds arrive and settle in the rushes between six and nine o'clock in the morning.

September 15.—I collected two Black and White Warblers, *Mniotilta varia*, one Pine Warbler, *Dendroica vigorsii*, and one Tennessee Warbler, *Helminthophila peregrina*, and a female Sharp-shinned Hawk, *Accipiter velox*.

September 17.—Received two Golden Plover, *Charadrius dominicus*, from Ashbridge's Bar.

September 20.—In Rosedale to-day, I collected one Nashville Warbler, *Helminthophila ruficapilla*, and one Blue-headed Vireo, *Vireo solitarius*.

September 20.—I received one Buff-breasted Sandpiper, *Tryngites subruficollis*, one Baird's Sandpiper, *Tringa bairdii*, one Bonaparte's Gull, *Larus philadelphia*, and one Greater Yellow-leg, *Totanus melanoleucus*, from Ashbridge's Bar.—J. R. THURSTON.

Totanus flavipes.—On August 7, I secured three species of the Lesser Yellow-leg, on Ashbridge's Bar.

Fall migrations begun.—On September 7, I noticed the first sign

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of migration among the insectivorous birds. Redstarts, *Setophaga ruticilla*, and several other Warblers were to be seen in great numbers.

September 16. — I secured a young Maryland Yellow-throat, *Geothlypis trichas*, and a male Olive-back Thrush, *Turdus ustulatus swainsonii*, in the University Grounds.

September 21.—I observed numbers of White-throated Sparrows, *Zonotrichia albicollis*, in different parts of the city, and saw two Purple Finches, *Carpodacus purpureus*, in the University Grounds.—G. E. ATKINSON.

(Thirty-third Meeting, October 7, 1890.)

Port Sydney observations.—May 7, saw Brown Thrasher, *Harporhynchus rufus*, and Snowbirds, *Plectrophenax nivalis*.

May 14.—Saw three more Snowbirds.

May 18.—Saw a Maryland Yellow-throat, *Geothlypis trichas*.

May 23.—Secured an Olive-sided Flycatcher, *Contopus borealis*.

May 25.—Saw three male Towhees, *Pipilo erythrophthalmus*. This bird is becoming commoner every summer; a few years ago it was never seen here at all.

May 28.—Blue-headed Vireo, *Vireo solitarius*, also saw a flock of Pine Siskins, *Spinus pinus*, which stayed three days, and then went north.

August 15.—Great numbers of Swallows migrating south, rested on my farm fences for two days. Pipits, *Anthus pensilvanicus*, are also here now. They remain longer in the fall than the spring.—W. KAY, Port Sydney, Muskoka.

Troglodytes hiemalis.—On October 5, I observed the last Marsh Wren, in Toronto Marsh.—JOHN EDMONDS.

Accipiter atricapillus.—In October a male Goshawk was shot by a gunner on Ashbridge's Bay, as it flew at his duck decoys.—J. R. THURSTON.

Migration notes.—The last week of September, and first week of October, migration has been at its height. Sparrows, Warblers, Thrushes, and Blackbirds, are to be seen all about the city. White-throated Sparrows, *Zonotrichia albicollis*, Myrtle Warblers, *Dendroica coronata*,

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Hermit Thrushes, *Turdus aonalaschkæ pallasii*, predominating among their respective groups.

Spinus tristis.—On October 5, I trapped twelve Goldfinches, between 10 a.m. and 4 p.m.

Zonotrichia albicollis.—On September 24, I caught two White-throated Sparrows, and between that date and October 7 I caught eighteen specimens, and one White-crowned Sparrow, *Zonotrichia leucophrys*, and one Swamp Sparrow, *Melospiza georgiana*. The White-throated Sparrows are exceedingly quarrelsome or I might have secured double the number as directly a second bird went on the nest the first comer would dash at him and drive him off, and I had to be contented with single birds generally, where I might have secured a dozen of any quiet dispositioned bird.—G. E. ATKINSON.

Holland River notes.—August 15 to August 19, were spent at Holland River, about forty-five miles north of Toronto, and a large number of birds were seen, and a few secured. On the morning of August 16, flocks of thousands of Red-winged Blackbirds, *Agelaius phœniceus* were seen near Holland Landing, and all down the river to Cook's Bay. Numbers of ducks, mostly Teal, were seen as well as quite a number of American Bittern, *Botaurus lentiginosus*, and Blue Herons, *Ardea herodias*, several young Black Terns, *Hydrochelidon nigra surinamensis*, and Common Terns, *Sterna hirundo*, were also flying about the marsh as if they had been breeding there. Coots, *Fulica americana*, Gallinules, *Gallinula galeata*, and different Grebes were common at the mouth of the river. We secured one Green-winged Teal, *Anas carolinensis*, three Bitterns, *Botaurus lentiginosus*, several Coots, *Fulica americana*, one Pigeon Hawk, *Falco columbarius*, three Yellow-legs, *Totanus flavipes*, several Blackbirds, and one Kingfisher, *Ceryle alcyon*, and J. R. Thurston secured a Coot's nest containing four eggs.—J. R. THURSTON, ED. DEACON, G. E. ATKINSON.

(Thirty-fourth Meeting, November 11th, 1890.)

Chordeiles virginianus.—On Sept. 27, Mr. J. Kelly disturbed a flock of about a dozen Night Hawks at Kew, evidently migrating. On Oct. 4, I secured a pair of Towhees, *Pipilo erythrophthalmus*, at Victoria Park, also one male Black-throated Green Warbler, *Dendroica virens*. On Nov. 1, I observed a flock of about eight Snowbirds, *Plectrophenax nivalis*. —J. A. VARLEY.

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Asio wilsonianus.—On Nov. 6, I secured a female Long-eared Owl in Rosedale.—WM. METCALFE.

Passerella iliaca.—For about a week Fox Sparrows have been quite common about the city. On Oct. 12, on Well's Hill, I saw a flock of about twenty, in company with Juncos; but on Oct. 13, I secured three specimens, and the same afternoon I trapped another in an orchard near our place. On Oct. 14, I secured three more on Well's Hill The other Sparrows are equally plentiful.—G. E. ATKINSON.

Holland River Notes.—On Oct. 17, a party of four took a trip to Holland River to do some collecting among the water-fowl and marsh birds. On Oct. 18, large flocks of Rusty Grackles, *Scolecophagus carolinus*, were observed all the way down the river and about the shanty small flocks of Swamp Sparrows, *Melospiza georgiana*, Song Sparrows, *Melospiza fasciata*, Red-wing Blackbirds, *Agelaius phœniceus*, Cowbirds, *Molothrus ater*, and Rusty Blackbirds, were to be seen at all hours of the day until Oct. 31. On Oct. 18, a large flock of Bonaparte's Gulls, *Larus philadelphia*, were seen and several specimens secured. One specimen of Pied-billed Grebe, *Podilymbus podiceps*, was secured the same day. Oct. 20, several large flocks of Snowbirds, *Plectrophenax nivalis*, which remained around for about two weeks roving about and alighting on the rushes at the water's edge; three specimens alighted on the bow of our boat on one occasion while we were watching for Ducks. Oct. 21, a day was taken in the bush, and several Hairy Woodpeckers, *Dryobates villosus*, Downy Woodpeckers, *Dryobates pubescens*, Blue-jays, *Cyanocitta cristata*, Meadow Larks, *Sturnella magna*, and Ruffed Grouse, *Bonasa umbellus togata*, were observed, and a few Woodpeckers, and one Jay were secured, but no Partridge. In the evening of the same day O. Spanner shot one young and one adult male Caspian Tern, *Sterna tschegrava* and another Pied-billed Grebe. Oct. 22, one young Horned Grebe, *Colymbus auritus*, two Coots, *Fulica americana*, and three Yellow-legs, *Totanus flavipes*, were secured. Oct. 23, two Pied-billed Grebes, one Gallinule, *Gallinula galeata*, and two Coots. Oct. 26, three Red-backed Sandpipers, *Tringa alpina pacifica*, and one Virginia Rail, *Rallus virginianus*, seen. Oct. 28, large flocks of Yellow-legs observed and a few secured. Oct. 31, one young Holbœll's Grebe, *Colymbus Holbœllii*. On Oct. 20, a flock of about twenty Geese, and Oct. 28 another flock of about ten were seen flying south. Besides the above a number of ducks were secured consisting of Scaup Ducks, *Aythya marila nearctica*, Lesser Scaup Duck, *Aythya affinis*, first secured Oct 18. Oct. 20, Ring-necked Duck, *Aythya collaris*. Oct. 22, American Golden-eye, *Glaucionetta clangula americana*, Buffle-head, *Charitonetta albeola*,

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Ruddy Ducks, *Erismatura rubida*, Black Duck, *Anas obscura*, Scoter, *Oidemia americana.* Oct. 25, Mallard, *Anas boschas*, Pintail, *Dafila acuta.* Oct. 26, Hooded Merganser, *Lophodytes cucullatus.* Oct 27, Redhead. *Aythya americana.*—G. E. ATKINSON.

Spizella monticola. Junco hyemalis. — On November 6, I collected several Tree Sparrows and Juncos, which were feeding in a stubble-field surrounded with trees on Well's Hill. On November 8, around the Bell-buoy at Lighthouse Point, I observed a large number of Winter Ducks, *Clangula hyemalis*, White-winged, and other Scoters, also several Herring Gulls, *Larus argentatus smithsonianus*, and Bonaparte's Gulls, *Larus philadelphia.* The first Cowheens were secured in the same locality, about October 11.—J. R. THURSTON.

Ectopistes migratorius.—A young female Passenger Pigeon was secured at Greenwood's Ave., on September 20.

Larus delawarensis.—Ring-billed Gulls have been numerous about Toronto Bay for some time, I have secured several specimens.—JOHN EDMONDS.

(Thirty-fifth Meeting, November 25, 1890.)

Buteo latissimus.—A young Broad-winged Hawk, collected by me on the Don Flats, on August 23, during the beginning of migration, —W. METCALFE.

Nyctala acadica.—A Saw-whet Owl was captured alive on a door-step opposite my house, on November 4, and came into my possession.—J. A. VARLEY.

Spizella monticola.—On November 15, I saw a flock of Tree Sparrows feeding in a piece of swampy ground, at the Humber. November 23, I saw a Red-tailed Hawk, *Buteo borealis* on Well's Hill. —E. DEACON.

Nyctala acadica. Passerella iliaca.—I secured one Fox Sparrow, on Well's Hill, on October 25 and on November 9 I secured a Saw-whet Owl at Lambton.—F. TWEED.

Antrostomus vociferus. Passerella iliaca. Plectrophenax nivalis.—On September 30, I secured a Whip-poor-will, which I consider late for this bird. October 4, I secured one Fox Sparrow, the first record, I believe, this fall. On October 25, I received a Snow-bird which was shot on Ashbridge's Bar in company with a few others. —H. H. BROWN.

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(Thirty-sixth Meeting, December 9, 1890.)

Summer collections, and observations.—July 9, young *Fulica americana*, and Virginia Rail, *Rallus virginianus*. August 12, I collected one Baird's Sandpiper, *Tringa bairdii*, and another on August 18. This bird is mentioned as being rare in Ontario, but it has been common about Toronto this fall. August 15, Solitary Sandpiper, *Totanus solitarius*. August 23, White-rumped Sandpiper, *Tringa fuscicollis*. September 22, Black-throated Green Warbler, *Dendroica virens*. September 23, Black-poll Warbler, *Dendroica striata*. September 27, Northern Phalarope, *Phalaropus lobatus*. September 28, Whip-poor-will, *Antrostomus vociferus*. October 4, Buff-breasted Sandpiper, *Tryngites subruficollis*. October 6, Short-eared Owl, *Asio accipitrinus*. October 10, Hairy Woodpecker, *Dryobates villosus*. October 21, Snow-flakes, *Plectrophenax nivalis*, first of the season seen on Ashbridge's Bar. October 22, one Snowy Owl, *Nyctea nyctea*, Golden Plover, *Charadrius dominicus*. October 26, Winter Wren, *Troglodytes hiemalis*. November 16, Tree Sparrows, *Spizella monticola*, very plentiful on the Bar. September 27, Spotted Sandpiper, *Actitis macularia*.—JOHN EDMONDS.

Buteo swainsoni.—On May 3, a male Swainson's Hawk was captured in Rosedale. This is an exceedingly rare capture for this vicinity.

Pandion haliaëtus carolinénsis.—On Sept. 15, a male Osprey was shot on the Don Flats and brought to me.

Urinator lumme.—A Red-throated Loon was shot at Green River east of Toronto, on Oct. 4. It was a full plumaged male bird.

Buteo borealis.—On Oct. 30, a female Red-tailed Hawk was sent me from Green River.

Nyctala acadica.—On Nov. 6th, I secured a Saw-whet Owl, one Barred Owl, *Syrnium nebulosum*, and one Long-eared Owl in Ashbridge's Woods. On the same day a partly albino Robin, *Merula migratoria*, was secured in Rosedale. It was a most peculiar bird being much larger than any I ever handled. The following are the measurements:—length, 10 inches; wing, 5⅜ inches. The back was very dark and the head entirely white.

Plectrophenax nivalis.—On Dec. 6, I shot one snowbird and two Goldfinches, *Spinus tristis*, in Rosedale.—D. G. COX.

Larus glaucus.—A Glaucous Gull was shot off the Queen's Wharf on Dec. 8th, and brought to me.

Somateria dresseri.—A Common Eider was shot off Toronto Island

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on Dec. 6. On the same date a Cooper's Hawk, *Accipiter cooperii*, was shot on Davenport Road near High Park, where it had previously killed a hen.

Lanius borealis.—On Dec. 13, a Northern Shrike was brought in from North Toronto.—W. CROSS.

On the forenoon of Sunday Nov. 30, 1890, I heard a flock of crows making a loud outcry among a clump of evergreens in St. James cemetery, and thinking they had an owl in chase, I was making my way towards them when they took flight up the Don Flats and rested among dense evergreens. In this flight they passed so close that I had no difficulty in determining the object of pursuit to be a Red-tailed Hawk. The crows—as is always the case with them—were very eager in the pursuit, clamoring loudly, laboriously flapping upwards, and then shooting downward in graceful curves quite close to the hawk, whose only care seemed to be to elude the "brawling brood" of annoying screamers. Again the hawk darted off towards the evergreens on the Castle Frank heights, and rested as before in a dense mass of foliage, closely pursued by the crows. These short flights were repeated several times until the Rosedale heights were reached. The hawk, perhaps hungry, and knowing of the whereabouts of breakfast, seemed unwilling to leave the ground, but by this time the crows were largely reinforced, numbering over thirty, and their deafening outcry was quite unsupportable. After the lapse of a few minutes the hawk again darted off southward, doubling on his former course, closely followed by a crowd as eager, noisy and eldritch as Tam o' Shanter's witches. When immediately above the drive in the Rosedale ravine, being at an elevation of about 100 yards, he suddenly swooped downwards at almost a right angle to his course with astonishing velocity, to within a few yards of the ground. then executing a short and rapid curve he darted up the ravine, and in a few minutes he was soaring above the trees and his outmanoeuvred and now rapidly dispersing foes. It was one of the greatest and neatest feats of bird flight I ever saw executed. The velocity was greater than that of a falling body, words fail to convey an adequate idea of the suddenness and magnitude of the lunge.—DR. W. BRODIE.

(Thirty-seventh Meeting, December 23, 1890.)

Lanius borealis.—On December 17, I secured a Northern Shrike on Ashbridge's Bar, also one Song Sparrow, *Melospiza fasciata*, and one Tree Sparrow, *Spizella monticola*, at the same place.—W. METCALFE.

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Junco hyemalis wintering.—On December 12, on Well's Hill, I saw a large flock of Juncos. It was a mild warm day. I passed the same place on December 8, but saw no birds, as the weather was cold and frosty.—G. E. ATKINSON.

(Thirty-eighth Meeting, January 13th, 1891.)

Lanius borealis. Syrnium nebulosum.—On December 25, I saw a Northern Shrike on Well's Hill, and on January 4, I saw a Barred Owl in the ravine at the same place.—E. DEACON.

Loxia curvirostra minor.—On December 25, I secured a male Crossbill on Well's Hill, which I believe is the first record of the season. On January 5, I saw a Screech Owl, *Megascops asio*, on the wires in front of the post office.—F. TWEED.

Bubo virginianus.—On December 29, I saw a flock of crows chasing a Great Horned Owl on the Don Flats, and I followed it for a long distance but could not get a shot at it. On January 9, I secured a Northern Shrike, *Lanius borealis*, on Gerrard St. East. It had been eating a mouse.—W. METCALFE.

Molothrus ater and Agelaius phœniceus.—On December 25, a Cow Bird and a Red-wing Blackbird were shot north of Toronto out of a small flock of Cow Birds.

Scotiaptex cinerea.—The first and only specimen of the Great Gray Owl was received from north of Toronto on January 13.—W. CROSS.

Habits of Native Birds in Captivity.—One of the chief aims of a Naturalist is to collect original information, and I don't think there is a better way of doing original work than by having living specimens to study from, in as near their natural condition as possible. To do this requires considerable time and trouble, but in the end you are satisfied, and fully repaid for your work. In dealing with birds some of the principal points to be noticed are, (1) Which birds agree; few would think of putting a Canary in a cage with an Owl. (2) To know what food these birds will live on and thrive, for instance Meadowlarks, Highholders, Robins and Bluebirds will not thrive on sunflower seed as Grosbeaks do, or Grosbeaks will not thrive on small seeds as the Sparrows do. (3) To study the habits of any bird thoroughly I find that (1) there should be regularity in everything, feeding, and cleaning cages, even heat, no draughts; birds can stand a great deal of cold but the hardiest will not

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last long in a draught, (2) kindness and attention; they should not be frightened or caught, and if a little cautiousness is exercised your birds will soon know you and will not be at all alarmed when you are near.

Bubo virginianus, *Great Horned Owl.*—This specimen came into my possession in infancy and although handled frequently gradually became of uncertain temper and objected to such intimacy. However he still shows some affection for his owner, and when hungry screeches if I appear within sight, until satisfied. He has a very peculiar appetite, sometimes being content with fresh meat, or living birds and mice, and sometimes he will leave the meat in a corner of the cage until in a putrid condition and then eat heartily of it. When he was about four months old he would take seven birds as big as sparrows at one meal. He will eat almost anything from a piece of fresh beef to a handful of cotton batting; if a mouse or small bird be given him he seizes it by the head crushes the skull, and with two or three jerks it is swallowed, feathers, fur and all; after digestion he throws up the feathers or fur with the bones and hard portions rolled up into a ball. Birds the size of a Sapsucker are swallowed whole, but large birds or animals are torn to pieces with the beak and claws. He will take a bath about twice a week in warm weather but not at all in winter; from November till about May, he hoots nearly all night and part of the day, but the remainder of the year only makes a sharp screech. He shows great aversion to a dog, cat or rabbit and whenever any of them come near the cage he lowers his head, throws back his horns, curves his wings, and spreading his tail will raise all his feathers to their full extent and walk about snapping his beak and hissing most ferociously; should the animal come near the cage he will bound against the bars at it and, as a rule, the intruder, taken by surprise, will depart hastily. When a snake is brought near him the tables are turned, he will then fly to the farthest corner of the cage and remain as quiet as possible, watching it until it disappears. If I am working near his cage at night he will amuse himself by throwing sticks and pieces of rag about and pouncing on them suddenly.

Colaptes auratus. — Flicker or Highholder. These birds being naturally of a shy disposition are very difficult to keep in a cage, as they dash themselves against the bars until exhausted. In confinement they will feed on corn or meat, but seem to get no nourishment from anything, and soon pine and die, if not liberated.

Otocoris alpestris praticola.—The Shorelark is a timid little creature, and although it takes readily to a cage and feeds well, it is constantly alert as if expecting to be taken by surprise, and at the slightest alarm it rushes to a corner, and conceals itself from view. It

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feeds on small seeds, wheat, and occasionally a worm. Occasionally on a bright day I have found it running from one end of the cage to the other, flipping its wings, and chirping as if in the height of enjoyment. It sometimes sings in confinement, and always has a faint chirp which it keeps up all night. I have frequently found it with its head under its wing, chirping about once a minute.

Corvus americana.—Crow. Of all the birds kept by myself, and friends, the crow takes the lead for mischief. To tell of all the antics of this bird would fill a volume; so I will just give a few of his principal traits. He will not be contented in a cage, but must have the yard, shed, fences, and sometimes the kitchen, where he wanders about seeking what he may steal. My Crow when I fed him would eat what he required, and put the remainder through a hole in the fence to a dog in the next yard. At last the dog got to bark for his meat, but the Crow fixed him; he would put the meat up to the hole, and as soon as the dog put his nose there he received a ferocious dig from the big black beak that sent him away howling, only to return in a few minutes for another. When he was not fed regularly he would perch on my fish-tank, and watch till a fish came near the top, when he would immediately seize and swallow it. In that way he ran down my stock of fish considerably before I discovered the cause; and when I put a net over the tank he got on it, and tried with might and main to dig a hole through it, but did not succeed.

Molothrus ater.—The Cowbird takes readily to a cage, becoming quiet and contented in about a week, but is very unsociable. Should any other bird approach him he snaps at it viciously, generally depriving it of some feathers; he accompanies every snap with a kind of "chuck" and if victorious hops to his mate and tries to express his love for her with a spluttering "cree." They eat any kind of seed in confinement and when let out in the yard devour any insects they come across.

Sternella magna.—Meadowlark. This bird when first caged will starve itself until almost able to squeeze through the bars, but eventually resigns itself and takes to feeding. On the slightest excitement it dashes against the wires in great alarm and finding escape impossible generally hides in a corner. When walking it stands up very straight, the back being almost at right angle with the ground. At every step he opens and closes the tail shewing the white feather at every spread. While in my possession he killed and partly eat a Shorelark, a White-throated Sparrow, and badly injured a Pine Grosbeak.

Coccothraustes vespertina.—The Evening Grosbeak takes readily to the cage but does not associate with any of the inmates. Generally be-

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ing contented with their own company, they will sit quietly in the cage for sometimes a whole day, and again they are on the jump the whole time and keep up a kind of wrangling noise among themselves. This and the loud call something similar to that of the Great-crested Fly-catcher, are the only sounds they make. They are very destructive to the smaller inhabitants of the aviary which may incur their displeasure and come within the reach of their powerful beaks. When fighting among themselves they use their beaks as a sort of shield receiving the blows of their opponent thereon. In confinement they eat ravenously of almost any seed, but are partial to sunflower and hemp. With a few slight variations in the olive green markings of the male, the plumage is the same all the year.

Pinicola enucleator.—The Pine Grosbeaks are of a gentle disposition, and never interfere with other birds, but seem to enjoy their company, and are as contented in a cage as in a tree after the first day. My male bird would watch for my coming to feed him, and would hop out on my hand on to my shoulder, and down into the yard where he would hunt worms for a while and always went back to the cage door to get in. If I did not let him out, he would mount to the highest perch and solace himself with a song, which is very sweet but muffled. They are, however, very hard to keep in hot weather; no matter how cool the cage may be, they seem to take a kind of decline and do not last long. In the summer and fall the red of the male turns to yellow and he looks like a new species, with the red and yellow feathers mingling together. They eat almost any kind of seed, but are partial to sunflower, hemp and buckwheat. They will also eat berries or fruit of any kind, or a piece of meat or worm.

Carpodacus purpureus.—The Purple Finch is tolerably well known as a cage bird, and seems as contented in a cage as in the bush; the specimen which I kept was better contented in the cage than in a room. They are very clumsy birds when let loose, and will fly against a pane of glass or a wall, and falling to the floor remain there till picked up and put in the cage, where they soon begin to arrange their feathers. The male has a very beautiful song, and sings almost as well in a large cage as in his native haunts; they are very fond of sunflower and hemp seed, but will eat almost anything given them in the shape of berries; occasionally they take a grub or worm.

Acanthis linaria.—The gay little Redpoll is also well known as a cage bird, and is quite happy in a small cage, but does not seem to get along well in company with other birds; they seem to be continually eating, yet never seem to put on flesh, generally being very thin and poor when dead.

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Spinus tristis.—The American Goldfinch is certainly the most interesting and handsomest bird I have ever kept, displaying a good deal of affection and being always lively. They are, however, hard to keep in the fall, being subject to the same decline as the Redpoll; both the spring and fall changes in plumage take place by moulting. They will feed on almost any seed, but are partial to sunflower and hemp, and will occasionally catch flies and beetles.

Zonotrichia leucophrys.—White-crowned Sparrow. The Sparrows as a class are almost alike in their feeding habits, and if one species is secured and watched there is no difficulty in relating the habits of nearly every species. They spend their time on the ground, and are constantly scratching. Of course as regards sociableness, there is considerable difference between some of them. The White-crowned are, however, very quiet inoffensive birds among other species: how they may be with their own species I have yet to learn. They feed on the ground, on the seed thrown out of the box by the others. I secured one specimen of this bird in the beginning of October, and had him about three weeks, when he was killed by the female Evening Grosbeak.

Zonotrichia albicollis.—White Throated Sparrow. This species lives well in confinement, and often utters his peculiar song, especially after gaining a victory over some of the other birds in the aviary; they seem to regard it as their especial mission to harass and annoy the other birds, and after a successful combat the male will mount to the topmost perch, and with wings and tail drooped and beak pointing upwards, will pour out his mournful "Old Tom Peabody," as if it was to be the last sound he would ever utter. In a cage they spend a large portion of their time on the ground, scratching over the loose seed.

Junco hyemalis.—In some respects the Juncos' habits are the same as the Sparrows', being often on the ground; they are more sociable and very timid, seldom showing themselves while they are watched, and on the slightest disturbance they hide in a corner or against the tree, and will not show themselves till everything is quiet, when they will hop out suddenly and chirp away as pleasantly as if they were in the bush. On a bright warm day they mount about half way up the tree and sing out their little ditty, which seems to put new life into the dullness of the aviary and generally starts all the other birds singing. They eat very little, and keep in good condition on the seed thrown about the ground by the Sparrows.

Melospiza fasciata.—The Song Sparrow has the same habits as the majority of sparrows but is rather more sociable and has some of the

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hiding nature of the Junco. They feed the same as the Junco, and have a great partiality for worms and caterpillars.

Melospiza georgiana.—The Swamp Sparrow has precisely the same habits as the Song Sparrow with a greater fondness for the water; after taking a good bath and getting thoroughly soaked it will roll in the sand; it feeds the same as the Song Sparrow and will eat worms, caterpillars, grasshoppers, and berries.

Passerella iliaca.—The Fox Sparrow is the largest and handsomest of the Sparrows I have ever kept, they are of a sociable disposition and their habits and food the same as the other Sparrows.

Pipilo erythrophthalmus.—The Towhee is a most interesting bird, very tame and quiet, but very hard to keep long, sensitive to cold and draughts; they are of a playful nature, and will play with anything they find in the cage such as string, etc. They spend all their time on the ground searching for seed and have a great partiality for hemp and sunflower seed.

Cardinalis cardinalis.—The Cardinal is much like the Towhee in habits but not quite so familiar with the other birds that seem to hold him in a kind of reverence; they very seldom molest him and are glad to get away when he is disturbed. It is very sensitive to cold and draught and spends most of its time on the ground. They eat sunflower, hemp, buckwheat and mountain ash berries.

Regulus satrapa.—Golden-crown Kinglet. These minute and beautiful little birds may be kept for a while in a cage and fed on small seeds, but will not thrive unless they have insect food. They are very tame but not cowardly and will attack any bird that comes near them.

Sialia sialis.—The Bluebirds can be kept in a cage, but not with success; they can be fed on hemp seed and Mocking Bird food, with an occasional worm; they will become very tame and feed from the hand, but seem to always pine for liberty, and if not released soon die.

Passer domesticus.—For four years I have kept English Sparrows in confinement and though they are credited with doing great damage to grain crops, my birds would never touch wheat, oats, corn, or peas; they would prefer crumbs of bread or a crust to seed at any time, and never kept healthy when fed on seed alone. This summer I caught several young Sparrows and put them in a cage in the yard to be fed by the old birds, which laboured from morning till night bringing caterpillars and grasshoppers from a neighbouring garden to feed them, and I have watched the old birds on the berry bushes picking off the caterpillars and other insects but leaving the berries untouched.—GEO. E. ATKINSON.

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(Fortieth Meeting, February 10, 1891.)

Merula migratoria.—February 1, I saw four Robins in the University Grounds.

Cyanocitta cristata.—February 5, observed a number of Bluejays in the University Grounds.—GEO. E. ATKINSON.

Ardea herodias.—On February 1, as I was walking along the Esplanade, I saw a Great Blue Heron, flying over the Bay, and afterwards learned that the bird had been about for several days.—JAMES H. AMES.

Otocoris alpestris praticola.—February 8, observed a pair of Shorelarks in the fields north of the city, one of them flew up, and lit on a telegraph wire.—ED. DEACON.

Larus glaucus.—On February 7, I saw a fine Glaucous Gull, flying over the bay.—WM. CROSS.

(Forty-first Meeting, February 24, 1891.)

The following list of birds are given as occurring in the vicinity of Orillia:

Ampelis cedrorum.—A pair of Cedar waxwings were observed here, from December 1890, to January 1891, feeding on berries of Mountain Ash.

Calcarius lapponicus.—A flock of Lapland Longspurs, observed at Gravenhurst, April 29, 1890.

Quiscalus quiscula.—Crow Blackbird, an albino specimen collected at Gravenhurst.

Junco hyemalis.—An albino Junco, collected August, 1890.

Corvus corax sinuatus.—A fine specimen of the Raven, collected December, 1890.

Dendragapus canadensis.—A Canada Grouse, collected December 15, 1890.

Haliæetus leucocephalus.—Bald Eagle, a specimen collected at Waubaushene, November 12, 1890.—W. MELVILLE, Orillia.

Spinus tristis.—On February 21, I collected a pair of American

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Goldfinches from a flock of four, the male had begun to acquire the yellow plumage.—J. A. VARLEY.

Ampelis cedrorum.—On February 22, I saw several Cedar Waxwings, in the Queen's Park.—HUBERT H. BROWN.

Lanius borealis.—Observed a specimen of the Northern Shrike, at Georgetown, also Crows feeding on seeds of Sumach.—W. METCALFE.

(Forty-first Meeting, February 24, 1891).

Nesting of the Winter Wren (*Troglodytes hiemalis*) —As I usually do in the early part of May, I took a ramble to some woods southwards of the town, where I saw some newly made nests of this species, in their usual nesting places, *i.e.*, the roots of newly-fallen trees, from which I hoped to secure some sets of eggs, but revisiting them on the 24th of May, I was returning disappointed, when I concluded to make a short nest-hunting ramble, in a piece of scattered wood to the right of my way. Near the western outskirt of this tract, the newly turned up root of a medium sized hemlock tree caught my notice, and to it I directed my steps. This tree in its fall had caught on another stub, so that its top was still high off the ground, and the upper part of the "root" slanted like the roof of a hut, the top of which would be about seven feet from the ground; and under this was a well-sheltered nook. Looking into this natural wigwam, the nest of a Winter Wren at once caught my eye, for it was directly in front, and towards the top of the roof, and some of the vegetable fibres used in its construction hung downwards; altogether it was less compactly formed, and more exposed to view than the nests of this species generally are, and more grass and other vegetable fibres and small brambles were employed in the formation of this particular nest, than this bird usually makes use of. The greater part, however, of this ball-shaped structure was composed of the common moss that grows on old logs, and the sides of certain trees in low places, while the inside was lined with fine dry grass, some small feathers and a little hair from the tails of cattle or horses; around the entrance were variously arranged the dry stems of hemlock leaves, a species of material always used by this bird for this purpose, when it can procure them in the vicinity of its nesting place. The entrance into this nest, as indeed the whole structure, was so much like that made by a mouse, that a person not acquainted with the subject, might easily mistake it for a nest of that little animal.

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When removed from its site in the mould, and rootlets of the "turn up," I found that the outside circumference was about fourteen inches, inside it would be about eight. The door was near the top in the outer side, leaving a soft and warm cavity of about two inches deep for the reception of the eggs and the cradle of the young. I did not at this time see or hear either of the parent Wrens, near the nest, but when I next visited the place, the songs of the male bird fairly made the echoes ring in the vicinity. There was, however, no mistaking the sound as that of the Winter or Wood Wren, for there is no other Canadian bird that makes a nest in any way resembling it, though the eggs are very like those of the Chickadee and Brown Creeper. From what I could see of the inside of this nest when discovered, I inferred that it was finished, and probably occupied, and I was not disappointed, for on inserting a finger, I found that it contained five eggs, and perfectly fresh, the color almost pure white, with a few reddish dots towards the larger end, being less spotted than others that I had seen, and before the contents were extracted they had a pinkish hue. Some five or six other newly made nests of this species were observed in this vicinity the past season, but none of them contained eggs or had inner lining, and I am led to conclude that they were the work of male birds. All of these were in the roots of fallen trees, and well concealed, and the female must have had her true nest near by, as the songs of the males were heard throughout the season. This was the fourth nest with eggs found in this vicinity in a period of fourteen years.—WM. L. KELLS, Listowel.

(Forty-Second Meeting, March 11, 1891.)

Perisoreus canadensis. Picoides arcticus. Dryobates villosus leucomelas. Nyctala acadica.—On February 24, received a pair of each of these species from Bardsville, Muskoka.—W. CROSS.

Loxia curvirostra minor.—February 25, saw a small flock, feeding on Mountain Ash berries, on College Street, Toronto.—E. DEACON.

Spinus tristis.—February 26. A flock of twenty are feeding on crumbs at my back-door, the first I have seen this season.

Acanthis linaria.—I have neither seen nor heard one this winter. February 21.

Corvus americana.—Occasional during this winter, 1891.—A. KAY, Port Sidney, (is about 150 miles north of Toronto.—EDITORS.)

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(Forty-third Meeting, March 24, 1891.)

Sialia sialis.—March 21, a small flock north of Rosedale. An early arrival.

Otocoris alpestris praticola.—March 2, very numerous in bare fields north of Toronto.—H. H. BROWN.

Sialia sialis.—March 22. Saw a flock high up in the air, flying to the west, also on March 23, two flocks flying to the north east, these are early arrivals.

Carpodacus purpureus.—March 23, collected a fine specimen in University Park.

Merula migratoria.—March 23, common in University Park.—G. ATKINSON.

Sialia sialis.—March 17, saw a pair within city limits.

Merula migratoria.—March 23, on the roof of a house, Queen Street east, Toronto.

Junco hyemalis.—March 23, saw a flock in Rosedale in full song.

Merula migratoria.—March 24, collected a specimen on Don Flats.

Dryobates pubescens.—March 24, collected a male specimen on Don Flats.

Sialia sialis.—March 24, common everywhere on Don Flats.—W. METCALFE.

Sturnella magna.—March 20, collected near Toronto, handed to me for mounting.

Bubo virginianus.—March 20, a fine specimen collected near Toronto and handed to me for mounting.—J. R. THURSTON.

(Forty-fourth Meeting, April 14, 1891.)

Sialia sialis.—March 25, collected two males on Well's Hill.

Certhia familiaris americana.—March 27, at Port Credit, fourteen miles west of Toronto, none were seen in the morning, but in the afternoon they were numerous, collected first specimen of the season.

Corvus americana.—March 29, building in University Park.

Sturnella magna.—March 30, first seen.

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Agelaius phœniceus.—April 1, first seen.

Quiscalus quiscula æneus.—April 1, first seen.

Molothrus ater.—April 2, arrived.

Junco hyemalis.—April 2, migrating northwards.

Melospiza fasciata.—April 2, arriving in large numbers.

Spizella monticola.—April 2, arriving, numerous.

Sialia sialis.—April 2, numerous all day, flying slowly eastwards.

Passerella iliaca.—April 5, several on Well's Hill.

Sayornis phœbe.—April 5, collected one specimen on Well's Hill.

Haliæetus leucocephalus.—April 5, saw one specimen flying northwards.

Poocætes gramineus.—April 9, arrived. Secured first specimen of the season.

Regulus satrapa.—April 10, first seen in Park.

Colaptes auratus.—April 10, first seen.

Sphyrapicus varius.—April 11, first of season.

Passerella iliaca.—April 11, several on Well's Hill.

Turdus aonalaschkæ pallasii.—April 11, collected specimen in Park.

Pipilo erythrophthalmus.—April 13, first seen.

Loxia leucoptera.—April 13, collected male.

Tachycineta bicolor.—April 13, first seen.

Regulus satrapa.—April 13, saw a large number in University Park ravine, hopping and flitting about on the grass. They would rise about six feet in the air, fly about ten feet forwards and drop on the grass. They resembled butterflies flitting in the sun. It was a very beautiful sight.

Ectopistes migratorius.—April 13, saw a male specimen in University Park ravine, which I pursued for half an hour but failed to collect.

Troglodytes hiemalis.—April 14, first seen in University Park.

Zonotrichia albicollis.—April 14, collected specimens in University Park.

Regulus calendula.—April 14, collected specimens in University Park.

Passerella iliaca.—April 14, numerous in University Park Ravine.—G. ATKINSON.

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Merula migratoria. Melospiza fasciata.—March 27, collected specimens on Well's Hill.

Sialia sialis. Passerella iliaca.—April 5, on Well's Hill.

Melospiza fasciata. Spizella monticola. Sayornis phœbe. Molothrus ater.—April 6, on Well's Hill.

Sitta canadensis.—April 6, on Well's Hill, the first seen since Christmas, 1890.

Haliæetus leucocephalus.—April 6, flying eastward.

Quiscalus quiscula æneus. Sturnella magna. Passerella iliaca.—April 6, collected specimens on Well's Hill.

Merula migratoria. Sialia sialis. Melospiza fasciata.—April 7, collected specimens on Well's Hill.

Junco hyemalis. Molothrus ater. Loxia curvirostra minor.—April 8, collected on Well's Hill.

Poocætes gramineus.—April 9, numerous specimens came this morning.

Pica pica hudsonica.—April 9. This morning I saw three birds flying northwards, which might have been of this species. They were less than Crows, their bodies were black, and wings white. They were flying with a small flock of Crows.

Dendroica coronata.—April 13, numerous specimens arrived this morning.

Loxia curvirostra minor. Sayornis phœbe. Passerella iliaca. Regulus satrapa.—April 13, collected on Well's Hill.—F. TWEED.

Melospiza fasciata.—March 25, 9 a.m., a fine clear morning, bright sunshine, temperature about 40°, light wind from the North-east; saw and heard nine Song Sparrows, along Don improvement and in Eastern Park, on an area of about three acres. They appeared to be quite numerous feeding among masses of *chenopodium*, *polygonum*, and *solidago* of last year's growth.

During the night of the 24th, the temperature fell to 29° with a strong north-easterly wind, ice formed a quarter of an inch thick. As the Sparrows were not here on the 24th and as it is not likely they would cross the Lake in such a cold night, in face of a brisk wind, they most probably were resting during the night of the 24th among the Typhas and semi-aquatic vegetation of Toronto Marsh, and took the first opportunity of moving northwards on the warm morning of the 25th. The morning of the 26th was clear and warm but only one Song Sparrow was heard.

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The afternoon of the 29th, was bright and warm, numerous specimens of Diptera, also *Aphodius fimetarius* and *Vanissa antiopa*, were observed. ravines east of the city limits, several Song Sparrows were heard and seen.—W. BRODIE.

Melospiza fasciata.—April 13, a bright warm forenoon, grassy fields beginning to look green, patches of ice and snow still lying in sheltered places. *Bufo lentiginosus* heard for the first time this season. Song Sparrows beginning to pair, apparently resident, numerous, singing.

Sialia sialis.—April 13, saw three pairs; they were looking for nesting places.

Merula migratoria.—April 13, saw one pair preparing to nest, heard several singing.

Corvus americana.—April 13, all paired and nesting.—W. BRODIE.

Melospiza fasciata. Merula migratoria.—March 29, abundant in Rosedale Wood.

Quiscalus quiscula æneus.—April 1, a small flock in a clump of pines on Bloor St. all day, but left during the night.

Philohela minor.—April 2, a male specimen in splendid spring plumage was received at the store. It had been killed by flying against the telegraph wires on College St. during the night.

Sayornis phœbe. Sialia sialis.—April 4, numerous specimens.

Molothrus ater. Quiscalus quiscula æneus. Melospiza fasciata. April 5, common in and around city.

Junco hyemalis. Regulus satrapa.—April 12, saw a flock of these two in company.

Troglodytes hiemalis.—April 12, a few specimens seen.

Sturnella magna. Colaptes auratus.—April 13, numerous specimens seen.

Spinus tristis.—April 13, observed a large flock in breeding plumage, the first seen since February 12.—E. DEACON.

(Forty-fifth Meeting, April 28th, 1891).

Spizella monticola.—April 17, common up to date, but this morning I could neither see nor hear any.

Poocætes gramineus.—April 17, this species seems to have taken the place of the Tree Sparrows.

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Harporhynchus rufus.—April 21, several males seen in Rosedale woods in full song.

Spizella pusilla.—April 21, the first of the season, numerous, in full song.—E. DEACON.

Quiscalus quiscula æneus. Poocætes gramineus.—March 27, observed several specimens.

Fulica americana. Botaurus lentiginosus.—April 11, observed in Toronto marsh.

Ammodramus sandwichensis savanna.—April 26, collected on sand bar, Ashbridge's Bay.—J. EDMONDS.

Ceryle alcyon.—April 19, observed at Victoria Park.

Spizella pusilla.—April 16, observed a flock in Rosedale woods.

Fulica americana. Progne subis.—April 19, collected in Ashbridge's Bay.

Harporhynchus rufus.—April 26, common in Ashbridge's Bush.

Corvus americanus.—April 26, a nest found containing four eggs.—J. L. JACKSON.

Otocoris alpestris praticola.—March 11, collected a female specimen in full breeding plumage.

Agelaius phœniceus.—March 29, observed a flock flying over sandbar, and marsh at Kew. They seemed very uneasy, and unwilling to alight; collected specimens.

Melospiza fasciata.—March 29 and 30, arrival of great numbers of Song Sparrows. Height of spring migration. I collected specimens, the plumage seemed darker than that of specimens arriving later.

Sturnella magna.—March 30, collected specimens at Kew.

Quiscalus quiscula æneus.—April 2, observed a pair near the Woodbine.

Lanius borealis. Dryobates pubescens.—April 9, collected specimens at Kew.

Sayornis phœbe. Certhia familiaris americana. Junco hyemalis.—April 12, numerous specimens observed at Kew.

Urinator imber.—April 20, a pair observed out in the lake, opposite Kew.

Poocætes gramineus. Sayornis phœbe. Sialia sialis.—April 13, collected specimens at Kew, the Vesper Sparrows were very numerous.

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Spizella monticola. Sturnella magna. Molothrus ater.—Collected specimens at Kew, April 15.

Ceryle alcyon.—April 17, a pair observed at Kew.

Ceryle alcyon. Passerella iliaca. Sialia sialis. Junco hyemalis. Colaptes auratus.—April 8, collected specimens at Kew. The Fox Sparrow was in company of a pair of Song Sparrows one of which was endeavouring to drive it away.

Regulus calendula. Dendroica coronata.—April 20, collected specimens at Kew.

Colaptes auratus. Melospiza georgiana.—April 25, collected specimens at Kew.—J. A. VARLEY.

Passerella iliaca. Turdus aonalaschkæ pallasii. Sphyrapicus varius and **Ceryle alcyon.**—Arrived on April 15.

Passerella iliaca.—Fox Sparrows appeared in large numbers on April 16, and had almost entirely disappeared by April 20.

Colaptes auratus. Spizella socialis.—Noticed on April 15.

Zonotrichia albicollis. Spinus tristis, Molothrus ater.—Observed on April 18.

Poocætes gramineus.—Arrived on April 20.

Tachycineta bicolor.—A Tree Swallow was seen on April 21.

Carpodacus purpureus.—I observed on April 25 a Purple Finch.—FRANK TWEED.

Passerella iliaca.—On April 15, I saw a Fox Sparrow, in company with a small flock of Juncos *(Junco hyemalis)*.

Spizella socialis.—April 15, I saw a Chipping Sparrow.

Tachycineta bicolor. Ceryle alcyon.—I first saw Tree Swallows on April 17, and on the same date saw a Kingfisher.—WM. METCALFE.

Nyctea nyctea.—A male Snowy Owl was shot at Bolton on April 16. The bars on the plumage were very brown.

Botaurus lentiginosus.—On April 21, an American Bittern was shot on the Humber.—JAS. R. THURSTON.

Clivicola riparia.—I note the arrival of Bank Swallows on April 19.

Carpodacus purpureus, etc.—On April 20, I saw Purple Finches and Prairie Horned Larks *(Otocoris alpestris praticola)*.

Melospiza georgiana.—I first saw Swamp Sparrow on April 20.

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Sturnella magna, etc.—Meadow Larks were quite common on April 25, but were very wild. On April 23, a flock of Wild Geese was seen by Mr. Herbert Petman, flying in a north-easterly direction over the bay.—J. B. WILLIAMS.

Turdus fuscescens. Chætura pelagica.—On April 19, I heard the Wilson's Thrush for the first time, and on April 18, Mr. F. Cockburn observed Chimney Swifts.

Antrostomus vociferus. Spizella pusilla.—On April 25, Whip-poor-wills and Field Sparrows had arrived.

Chelidon erythrogaster. Progne subis.—I saw a Barn Swallow and a Purple Martin on April 25.

Mniotilta varia.—Black and White Creepers around on April 27.

Harporhynchus rufus.—Arrived on April 28.—GEO. E. ATKINSON.

(Forty-sixth Meeting, May 12th, 1891).

Philohela minor.—On April 29, I saw an American Woodcock at North Toronto.

Chordeiles virginianus. Helminthophila ruficapilla.—I saw for the first time this season Night Hawks and Nashville Warblers, on May 1.

Dendroica cærulescens. D. virens.—May 6, Black-throated Blue Warblers arrived. May 8, Black-throated Green Warblers arrived.

Icterus galbula and **Zonotrichia leucophrys** arrived on May 9, at Toronto.

Melanerpes erythrocephalus.—Red-headed Woodpecker seen on May 10.

Dendroica maculosa.—May 12, I saw Magnolia Warblers.—FRANK TWEED.

Compsothlypis americana.—On May 12, I observed a Parula Warbler in Rosedale, Toronto.

Dendroica blackburniæ.—Saw a Blackburnian Warbler in Rosedale on May 12.—W. METCALFE.

Habia ludoviciana.—I shot two Rose-breasted Grosbeaks on the Don, on May 9.

Antrostomus vociferus.—On May 10, I shot a Whip-poor-will.

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Dendroica pensylvanica.—Seen on May 10.—J. B. WILLIAMS.

Icterus galbula and **Dendroica æstiva.**—I heard two Baltimore Orioles, and several Summer Warblers on May 10, in north part of city. —HUBERT H. BROWN.

Sturnella magna, nesting.—On May 2, a nest of this species was brought to me with three eggs found just north of the city.

Merula migratoria, nesting.—On May 3, I found a Robin's nest containing two eggs, in an elm tree. I think the situation was very unusual, the tree being bare; they usually build in evergreens when breeding early in the season. I also found several other nests later on.—GEO. E. ATKINSON.

Compsothlypis americana.—I saw a Parula Warbler in the city on April 30.

Galeoscoptes carolinensis arrived.—I saw a Catbird first on May 5.

Dendroica æstiva. Icterus galbula.—Yellow Warbler arrived May 6, and Baltimore Oriole on May 8.

Setophaga ruticilla.—Saw an American Redstart on May 12.—F. COCKBURN.

Trochilus colubris.—On May 10, I saw a Ruby-throated Hummingbird on the sandbar.

Cistothorus palustris. Melospiza georgiana.—I observed these in the marsh on April 14.—JOHN L. JACKSON.

Polioptila cærulea at Toronto.—I collected a female Blue-gray Gnatcatcher on May 5, on Well's Hill, North Toronto. This bird is a rare visitor in this locality.

Totanus melanoleucus.—On May 8, I shot a pair of Greater Yellowlegs on the sandbar.—O. SPANNER.

Ægialitis meloda at Toronto.—I collected a specimen of the Piping Plover on May 1, at sandbar, and I also procured a Gallinule, *Gallinula galeata.*

Anas discors.—On the same date large numbers of Bluewinged Teal were observed in company with Scaup Ducks.

Sterna tschegrava.—On May 7, I procured three fine specimens of the Caspian Tern, at Ashbridge's Bay, and on May 10, I observed several of this species on the Humber Bay.

Merganser americanus. Oidemia deglandi.—On May 11, I saw American Mergansers near Mimico, and also a pair of White-winged Scoters.—J. R. THURSTON.

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(Forty-seventh Meeting, May 27, 1891.)

Zonotrichia leucophrys.—On May 16, I found quite a flock of White-crowned Sparrows in the Don Valley.

Passerina cyanea.—I saw an Indigo Bunting on May 23.

Sylvania canadensis. Spinus tristis.—Of the former I secured a male specimen, the latter were very numerous on May 23.

Dolichonyx oryzivorus.—I saw a Bobolink on May 25.

Piranga erythromelas, scarce.—There seems to be a scarcity of Scarlet Tanagers this year; their movements seem to be very erratic.—J. B. WILLIAMS.

Vireo olivaceus. Dolichonyx oryzivorus.—First seen on May 13.

Seiurus noveboracensis.—Arrived May 14.

Large migration of Zonotrichia leucophrys.—During the night of May 13th, the largest migration of White-crowned Sparrows on record took place at Toronto. On the morning of the fourteenth the city was swarming with them. They were to be seen in every yard, tree, shrub and street and their song seemed to be universal.

Their numbers increased till the fifteenth, and on the sixteenth there was a marked movement to the north, and they continued to diminish in numbers till the twenty-third when but one or two were to be seen.

While here they would mix with *Passer domesticus* and feed on horse manure, etc. This movement was remarkable as it appeared to be local, for Mr. Brown informs me that even in the near surrounding country and woods, there were very few to be seen, while in the city they were exceedingly abundant.

Vireo gilvus.—On May 16, I secured a Warbling Vireo in the University grounds.—GEO. E. ATKINSON.

Poocætes gramineus, nesting.—May 12, on Well's Hill, North Toronto, I found a Vesper Sparrow's nest with two eggs.

Dendroica maculosa. D. coronata.—I saw Magnolia Warblers on May 14, and Myrtle Warblers on May 18.

Myiarchus crinitus. Empidonax minimus.—Seen on May 14.—FRANK TWEED.

Piranga erythromelas.—I shot a female Scarlet Tanager at East Toronto on May 25. This is the only one of this species I have seen this season.

Vireo olivaceus.—Were unusually numerous at East Toronto on May 25.—HUBERT H. BROWN.

Ardea virescens at Toronto.—I saw a Green Heron on May 17,

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in Toronto marsh, and on May 16, I shot a male *Piranga erythromelas*, at Kew Beach, Toronto.—J. A. VARLEY.

(Forty-eighth Meeting, June 9, 1891).

Zonotrichia albicollis.—On June 6, I came across a pair of White-throated Sparrows, whose actions suggested the proximity of their nest, but I failed to find it, so I shot both birds. Next day I visited the same place and heard another bird singing, and on approaching him, the female flew from a clump of bushes. I hunted thoroughly for a nest, but could not find one, so I left the birds intending to watch them more closely another time.—EDWARD DEACON.

Bald-headed Eagles killing Deer.—In the spring of 1891, I had two specimens of the Bald-headed Eagle, *Haliæetus leucocephalus*, sent to me to be mounted, from Redwood, on Lake Joseph, Muskoka. On making enquiries, I learned that they were caught in the act of eating a Deer they had just killed. Mr. Lee, who owns them relates the circumstances as follows:

"The winter of 1890-1, I spent in company with a friend trapping in that section of country lying north-west of Lake Joseph. Returning one day from a visit to our traps, we were going round an arm of the lake when five eagles rose from the ice and flew out towards the lake. I was carrying a pack of skins and had my rifle strapped on my back, but my partner not being hampered, fired and killed the white-headed bird. We went to where they rose from, and found the remains of a doe fawn of about seventy-five pounds weight; the animal had ventured out on the ice, and being some distance from cover had fallen an easy prey to the flock of hungry birds. We went back on the tracks some distance, and not seeing the tracks of any other animal were quite sure that it was killed by the Eagles. We poisoned the carcass and returning next day found the young bird dead, close by. Two other cases of small Deer killed by Eagles had come under my notice the same winter, but I have never known them do so during my former residence in the country, and do not know of anybody who has had a like experience." The white-headed bird referred to was a mature specimen with pure white head and tail, and large yellow beak, the young bird was full sized, a large powerful bird, possibly over a year old, the bill horn coloured, and the head and tail washed and blotched with a dirty greyish white, the markings from the head extending some distance down the middle of the back below the usual termination of the neck marking.

Mr. Lee was of the opinion that all five birds were of the same family, *i.e.* two old birds and three youngones.—JAMES R. THURSTON.

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REPORT OF THE OCCURRENCE OF THE EVENING GROSBEAK, (*COCCOTHRAUSTES VESPERTINA*), IN ONTARIO DURING THE WINTER OF 1889-90.

Being a summary of recorded observations of the occurrence of this bird at Toronto, and other localities in Ontario; also notes on the occurrence and habits of the bird in the Province of Manitoba, collected and arranged by the Ornithological Sub-section of the Canadian Institute.

January 11, Mr. C. H. Baird, of Paris, Ont., has informed me that a large flock of Grosbeaks were in that vicinity for some days at this date, none were collected.—J. EDMONDS.

January 16, one female specimen collected from a flock of twenty observed near Lorne Park, about fourteen miles west of Toronto. The gizzard was distended with choke cherry and haw stones, crushed by the powerful beak of the bird.—E. E. THOMPSON.

January 18, observed a solitary specimen on Wilcox St., feeding on mountain ash berries, but failed to collect it.—G. E. ATKINSON.

January 18, while walking in Rosedale I observed a large flock of birds resting on some oak trees, and soon made them out to be Evening Grosbeaks. I made a double shot but was much disappointed to find my second shot had brought down an adult male Pine Grosbeak, however, on stepping under the tree I was pleased to find as the result of the first shot, my first Evening Grosbeak. Soon after I collected another male and two fine females.—W. CROSS.

January 19, saw a flock of eight Evening Grosbeaks resting on a tree by the G. T. R. track, East Toronto. On the afternoon of the same day I observed a flock flying over Winchester St., within city limits.

January 21, Messrs. Mitchell, Gray and Marsh collected twenty-four specimens, nine males and fifteen females, in Rosedale. I obtained six of them and found them all very fat. Their crops were full of unbroken pits of *Prunus serotina*, while their gizzards were crammed with the same broken, sharp sand, and a few fragments of a shell, probably a *Helix*.—D. G. COX.

January 21 to February 3, Evening Grosbeaks were common at the Highland Creek, about fourteen miles east of Toronto. None were observed at Claremont, ten miles to the north.—JAS. ANNIS.

January 22, I again visited the locality in Rosedale where I had found

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them on the 18th, without finding any, but on going a little further on, I surprised two males feeding on the ground, but failed to collect them. Meeting a friend we went to where he had previously seen a large flock feeding on the ground. We soon came on them still feeding on the ground, and I secured several pairs in first rate condition.—W. CROSS.

January 22, I came on a flock of about fifteen Evening Grosbeaks in a field north of the city, and collected three specimens. They were feeding on the ground, on witch hazel, white oak and red hawthorn. On my way home I saw a pair on Jarvis St., feeding on berries of the mountain ash.—J. B. WILLIAMS.

January 24, I observed three Evening Grosbeaks in Rosedale, and watched them for some time. They fed on the ground, and their actions were much like those of the *Pipilo erythrophthalmus*. No doubt they were in search of fallen fruits and seeds. Two specimens secured this day had been feeding on the sprouted seeds of maple; their stomachs were excessively distended.—E. E. THOMPSON.

January 24, I saw two pairs of Evening Grosbeaks in the Normal School Grounds, feeding on mountain ash berries. They were very tame. —H. H. BROWN.

January 24, while walking in Rosedale to-day, I came on a flock of Evening Grosbeaks, and collected five fine specimens.—J. H. AMES.

January 25, at North Toronto I saw a flock, but could not collect any. Several collectors had been hunting them, and six or eight specimens had been procured. H. Parish saw two in the Normal School Grounds. —H. H. BROWN.

January 25, Mr. Powell secured three pairs in Rosedale. They had been feeding on seeds of white ash and on pits of mountain ash.—D. G. COX.

January 27, Mr. Ames and I saw a large flock in Rosedale, but did not collect any.—W. CROSS.

January 27, I noticed a flock of the same birds flying north over the C. P. R. track.—J. B. WILLIAMS.

February 1, I have not observed any Evening Grosbeaks about Claremont. I heard of their appearance east, west, and south of this point, and anxiously watched for them.—G. BRODIE, M.D.

February 1, I saw a flock of six or eight, at North Toronto.— H. H. BROWN.

February 1, I saw a flock of five north of Rosedale.—J. B. WILLIAMS.

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February 1, I have looked for Evening Grosbeaks, but up to date have seen none in the neighborhood of Scarboro.—W. HORSEY.

February 2, saw one specimen at North Toronto.—H. H. BROWN.

February 8, saw large flock pass over my head. They passed and repassed several times during the day. I collected two specimens at corner of College and Spadina Avenue.—G. E. ATKINSON.

February 8th, saw three small flocks on Carlton St., feeding on mountain ash berries. In the afternoon I saw a flock of about thirty in the Don Valley, feeding on the seeds of the white ash. I watched their manner of feeding; some of the birds cut the seeds off allowing them to fall to the ground before eating them, others ate the seeds as they picked them. I collected four specimens, two males and two females. Their stomachs contained nothing but white ash seeds.—WM. METCALFE.

February 9th, I saw five males and four females in a mountain ash tree on College Street, there were also several feeding on the ground. I subsequently saw about fifty on Huron Street, they were nearly equally divided between Pine and Evening Grosbeaks, I shot a female. These birds were very tame, and I almost got near enough to knock them over with a walking stick. I think the recent fall of snow has driven them into the city in search of mountain ash berries, their favorite food, the black ash seeds being too far under the snow. The berries are eaten off nearly all the mountain ash trees.—H. H. BROWN.

February 9th, I collected three in the city.—GEO. E. ATKINSON.

February 9th, noticed a number of Grosbeaks in a mountain ash tree on Rose Avenue, some of them were red plumaged, *Pinicola enucleator*, while two were of the same species in female plumage, they were feeding on the berries. On the ground was a female *Coccothraustes vespertina*, eating the fruit dropped by those in the tree, this is eminently characteristic of both species. The Pine Grosbeak rarely feeds on the ground, while the Evening Grosbeak commonly does so. Other flocks of both species were observed flying in a southerly direction at a considerable height. These flocks consisted of from half to a dozen birds each.—ERNEST E. THOMPSON.

February 10th, saw three Evening Grosbeaks on College Street.—C. E. PEARSON.

February 10, saw a flock of about ten birds on Rose Avenue.—J. B. WILLIAMS.

February 10, I secured three males and three females, two of the latter

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being alive and almost uninjured. Altogether I have collected thirteen specimens up to date.—G. E. ATKINSON.

February 10, on Surrey Place I saw one Evening Grosbeak among a flock of about twenty-five *Pinicola enucleator*.—HUBERT H. BROWN.

February 10, in the Queen's Park I saw three Evening Grosbeaks eating the berries of the mountain ash, but I failed to secure any.—C. E. PEARSON.

February 11, I have two fine male Evening Grosbeaks alive, which were taken on February 11. They seem to be taking kindly to captivity and their new food, they will take mountain ash berries from the hand. I hope to be able to keep them and hear their song.—WM. CROSS.

February 11, I caught three female Pine, and one female Evening Grosbeak alive by the aid of a pole, and fine wire noose. The birds are so tame that it is easy to slip a noose over their heads as they feed. The males however of both species are rather wary, they keep to the top of the trees, and fly off even at a slight alarm, so I failed to secure any males alive. Immediately on being caught the Evening species utters a loud cry or shriek which it keeps up for some time, and the Pine Grosbeak cries out in a much weaker and more husky voice. When put in a cage the Evening Grosbeak set upon the others and used them very badly, having a great advantage in the powerful bill.—E. E. THOMPSON.

February 11, I saw a beautiful male specimen in the Queen's Park.—C. E. PEARSON.

February 13, I secured a male specimen on Howard Street, Rosedale. J. A. VARLEY.

February 15, the last observed flock of Evening Grosbeaks, at Lorne Park is reported by Mr. Luker, for February 15.—ERNEST E. THOMPSON.

February 23, I saw three Evening Grosbeaks in the city.—J. L. JACKSON.

February 25, for the past few days Evening Grosbeaks have been common in East Toronto.—C. W. NASH.

March 16, I observed Evening Grosbeaks in my garden on this date, they were feeding on the apples left on the trees from last year.—MRS. J. R. BARBER, Georgetown.

March 17, we had these birds here the greater part of the winter. In one corner of my yard there is a mountain ash, which was plentifully covered with berries, that proved a glorious feast for the little beauties.

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Several times I had my gun ready to secure specimens, but my heart failed me each time. They have been noticed in bunches of three to five, all over this section, and are exceedingly tame, a number were secured by Mr. Melville, our local taxidermist.—A. P. CORNELL, M.D, Gravenhurst.

March 19, I observed two evening Grosbeaks on this date in our orchard.—MRS. J. R. BARBER, Georgetown.

April 11, at Todmorden, north-east of Toronto, I saw five Evening Grosbeaks on a birch tree, near Taylor's Paper Mills, there were four males and one female. On returning half an hour afterwards they had flown, and hearing them in a piece of woods close by, I went over and found a small flock in the top of a pine tree. They were playing with each other, apparently pairing, but although the males exceeded the females in numbers there was no fighting. They were uttering their characteristic whistle and another call which I never heard before, the whistle blending into a soft musical r-r-r-r-r. These calls repeated by a number of birds made a very pleasing little concert. I watched them as they flew from tree to tree several times, and I counted thirty-five specimens, of these at least twenty-four were males. At one time nineteen settled on the top of a red oak, so closely together that a charge of small shot might have killed every specimen. On walking about a mile homewards I came on a flock of over fifty in R. Davies' orchard, feeding on the ground among brewery refuse which was scattered as manure.—W. BRODIE.

April 13, while shooting at Chester with Mr. Jas. R. Thurston we came upon a flock of about fifty birds, feeding on brewery refuse. We collected seven males and females. There were more males than females in the flock.—JOHN EDMONDS.

April 15, while collecting on Well's Hill I came across a flock of Evening Grosbeaks which numbered about thirty, in the top of a clump of pines. I followed them and eventually secured five females and three males, one of the former taken alive. I only observed six or seven males in the flock. These birds have been absent almost entirely from Toronto since March 1.

April 17, I saw a female take several straws from a Sparrow's (*Passer domesticus*) nest, and expecting she was building I followed her. She carried them about for some time and at last carelessly dropped them on top of a witch hazel tree and left them.

April 21, the birds were observed in the same place, but no further attempt at nesting was apparent, nor did they seem paired.

April 29, these birds are still here.

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May 7, 18, and 26. I saw the same birds, but they got shy and at last disappeared as mysteriously as they came.—G. E. ATKINSON.

I have not observed the Evening Grosbeaks at Mildmay, and I have come to the conclusion that they were not seen north of Guelph.—W. A. SHOENAU.

Evening Grosbeaks are quite unknown in this district. Mr. W. P. Melville, collected a few at Gravenhurst in March, 1890, the only Muskoka specimens I ever heard of.—A. KAY, Port Sydney, Muskoka.

January, 1890, Evening Grosbeaks common here, four specimens collected.—W. SUTHERLAND, Orillia, Ontario.

March, 1890, several specimens of the Evening Grosbeak were seen here, a few were collected.—W. P. MELVILLE, Gravenhurst, Ontario.

A large number of Evening Grosbeaks arrived here about the first of March, 1890, and they were apparently feeding on the ash berries and the cedar. They stayed here about five weeks, leaving the first week in April. I have not observed any since. I mounted I think about a dozen birds for different persons in this neighborhood, there were some very fine specimens among those I mounted, and I have four or five still in my possession —R. C. BURT, Chemist, Chatham, Ontario.

Food of Evening Grosbeak determined from dissections. All the birds were collected in the vicinity of Toronto, they were all fat and the stomachs of all were full.

Jan. 21, ♀, seeds of white ash and maple.

24, ♀, crop and gizzard, seeds of maple.

24, ♂, crop and gizzard, seeds of maple.

24, ♀, seeds of ash.

25, ♂, seeds of ash.

25, ♀, seeds of ash.

26, ♀, seeds of white ash and maple.

26, ♂, seeds of mountain ash.—E. E. THOMPSON.

Of the eighteen specimens examined by me, all were very fat and the stomachs in nearly every case full. The contents were as follows :—

Jan. 25, ♀, nutlets of *Prunus serotina*, with pieces of the shell and sand.

25, ♂, nutlets of *P. serotina*, shell and sand.

25, ♀, nutlets of *P. serotina*, shell and sand.

25, ♂, seeds of *Fraxinus americana*, nutlets of *P. serotina* and *Pyrus acuparia*.

25, ♂, nutlets of *P. serotina*, and broken up shell.

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Jan. 25, ♀, the crop and gizzard full of nutlets of *P. serotina*, and broken up shell.

21, ♂, nutlets of *P. serotina*, whole in crop, in gizzard broken up with pieces of shell and sand.

21, ♂, nutlets of *P. serotina*, pieces of shell and sand.

21, ♀, nutlets of *P. serotina*, shell and sand.

21, ♀, nutlets of *P. serotina*, shell and sand.

21, ♀, nutlets of *P. serotina*, shell and sand.

21, ♀, nutlets of *P. serotina*, shell and sand.

Feb. 1, ♂, nutlets of *P. serotina*, and *Crætagus*, sp.

1 ♂, seeds of *F. americana*, and sand.

1, ♂, seeds of *F. americana*, and sand.

8, ♂, seeds of *Pyrus acuparia*, and sand.

8, ♂, seeds of *Pyrus acuparia*, and sand.

8, ♀, seeds of *Pyrus acuparia*, and sand.—DANIEL G. COX.

Food of the Evening Grosbeak.—Of the seventeen specimens dissected by me, all were in good condition, it would be more accurate to say they were fat, the gizzards were all full, and all were collected in or near Toronto.

Jan. 16, ♂, broken nutlets of *Crætagus* sp.

16, ♀, seeds of *Fraxinus americana*, sand.

18, ♀, broken pits of *Pyrus acuparia*, craw and gizzard full.

18, ♀, pits of *P. acuparia*, seeds of *F. americana*, sand.

18, ♀, seeds of *F. americana*, sand.

18, ♀, seeds of *F. americana*, sand.

22, ♀. sprouted seeds of *F. americana*, sand.

22, ♂, seeds of *F. americana*, sand.

22, ♂, seeds of *F. americana*, broken nutlets of *Crætagus*, sp.

22, ♂, seeds of *F americana*, pits of *P. acuparia*, sand.

22, ♀, seeds of *F. americana*, pits of *P. acuparia*, sand.

22, ♀, broken pits of *Prunus virginiana*, *P. acuparia*.

22, ♀, broken pits of *P. virginiana*, *P. acuparia*, seeds of *F. americana*.

25, ♀, broken pits of *P. virginiana*, sand.

25, ♀, seeds of *P. acuparia*, sand.

25, ♂, seeds of *P. acuparia*, *Hamamelis virginiana*, sand.

25th, ♂, seeds of *P. acuparia*, *F. americana*, sand.—W. BRODIE.

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Evening Grosbeak at Hamilton, Ont. — This bird was first observed here on December 19, feeding on the berries of the cedar; flock after flock passed along, going east, till near the end of January, when for a few days none were seen. I heard of them all along the north shore of the lake, as far down as Kingston. About February 10, the return migration began, and was very active while it lasted, but they were only noticed for three or four days. At this time they fed mostly on the seeds of such apples as were found still hanging on the trees in the orchards, the berry bushes being well cleared of fruit on the eastern trip. I made enquiry at different points west to find out if possible by what route they travelled, but Chatham was the only point where I heard of them, around Chicago they were not observed. Most likely they came down the east shore of lake Huron.—T. McILWRAITH.

Evening Grosbeak.—This bird is a common winter visitor to the Province of Manitoba, frequenting the woods along the banks of the Assiniboine River in great numbers; on the Red River it is common at times, but does not appear to settle down into permanent winter quarters there. In the Riding Mountains latitude 50° 30′ I found it common in December 1884, the thermometer at the time ranging from 30° to 40° below zero.

It is also found in all other parts of the Province that are heavily timbered, its favorite resorts being the groves of North-west maple or box elder, which usually grows on the banks of rivers or lakes, on the seeds of this tree it feeds, perhaps occasionally varying its diet with buds of other deciduous trees. I examined the stomachs of a great many in Manitoba, and never found anything else contained in them. Whilst here they seldom visit the low scrub or the ground, except in spring, when they will sometimes crowd thickly together on a bare spot, apparently seeking gravel for digestive purposes.

They first arrive early in October, continually increasing in numbers until the 1st of December, when they reach the maximum, and they remain until about May 16th, when they all disappear together.

The following are dates of their arrival and departure for three years:

FIRST SEEN.	LAST SEEN.
1884,	May 16th, several flocks.
1885, October 12th, one flock.	May 16th, many seen.
1886, October 1st, a small flock.	April 23rd, a few seen.

Mr. Thos. S. Roberts records them as regular visitors in winter to Minneapolis, Minnesota, and in 1880 says he saw them last on May 3rd; though they usually stay much later, but the weather being very warm at that time, probably hastened their departure. At this place they

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resort to an island which is timbered in part with maple and box elder, the seeds of which they make their regular diet, as they remain hanging in bunches on the trees through the winter.

During the winter in Manitoba they are usually seen in small parties, not exceeding six or eight in number, and are quiet and unobtrusive in their manner, flitting about the maples feeding, occasionally uttering their single call note, which very much resembles that of the European Bullfinch.

Early in April they congregate into large flocks, in which the males preponderate, they are then restless, frequently rising from the tops of the trees and making long flights high in the air over their haunts.

In view of the fact that this bird's nest has never been found, it may be worth noting, that the Pine Grosbeak, its usual winter associate, whose nest and breeding place are known, arrives in this Province about the middle of November, and leaves here about the end of March, whilst the Evening Grosbeak arrives about six weeks earlier in the autumn, and remains about six weeks later in its winter quarters, from which I should infer that it does not go so far from its winter haunts to nest, as does the Pine Grosbeak.

In January 1890, immense numbers of these birds were seen in eastern Canada and the United States, they having for some unexplained reason wandered far from their range. A most peculiar feature of this movement in Canada was the first appearance of the birds in the east, and their gradual extension westward, exactly the reverse of what one would expect from birds whose habitation is the interior of north-western America.

The first records I have of their occurrence at that time are from near Montreal in Quebec, and Kingston in eastern Ontario, during the first two weeks of January. At the end of this month they had reached Toronto, where I saw them in considerable numbers; at this time they were also seen in the States of New York, Massachusetts, and Connecticut. Early in February they had reached the States of Ohio, Michigan and Illinois. Judging from these records, I assume that a large number of the birds must have migrated from their summer home in an easterly direction, until they reached the Province of Quebec and some of the eastern States, thence they gradually worked westward along the Great Lakes to their proper habitation.—C. W. NASH.

Observations on migration of Evening Grosbeaks, 1890.—On the 21st; January, 1890, Messrs Gray, Marsh, and Mitchell, reported a flock of about three-hundred Evening Grosbeaks, males and females, on Rosedale Heights, north of C. P. Railway track, they were feeding on the ground and seemed to find abundance of food. The subsequent examinations of the stomachs determined the food

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to be nutlets of the wild cherry, *Prunus serotina*, which had fallen the year before. The above named gentlemen secured nine males and fifteen females that day besides leaving several wounded birds which escaped to the neighbouring gardens. They were in excellent condition, being very fat. The birds remained in that vicinity about two weeks and during that interval Gray, Mitchell, and myself visited the place, and obtained specimens each time, in fact they were seen there as long as the food lasted. From February 1st, to 8th, I saw several small flocks on Ontario and Howard Streets, and on the Danforth Road, feeding on the seeds of mountain ash, *Pyrus acuparia*, and on February 27th, I saw a flock of about thirty Evening Grosbeaks, in company with about a dozen Pine Grosbeaks, *Pinicola enucleator*, in Mr. William's garden on Ontario Street, stripping an apple tree which contained about half a bushel of rotten fruit, that had not been gathered the year before. On making an examination of the refuse under the tree after the birds departed, I found that only the seeds had been eaten, as in every case where I have made examinations of the stomachs of these birds, I found the kernels of the different seeds, and nutlets composing their food have been entirely denuded of their shell.

I had reports given me, almost every day by many reliable persons, of flocks being seen on Logan and Pape Avenues, from the 1st to the 20th March, on which last date while collecting Gulls in the vicinity of Norway, I saw a flock feeding on the cones of a large pine tree, *Pinus resinosa*, this is the last time I saw the birds that year, although I heard several reports of them being seen till the middle of April. In my opinion from the first appearance of the birds in January, until the middle of April, they were seen every day by some persons about Toronto and suburbs, and that they came to us for food is very evident by their remaining with us so long, and their being so exceedingly tame. Numbers of them were killed by boys with sticks and catapults every day, in the streets of our city.—D. G. COX.

I have made as extensive enquiry as possible in regard to the occurrence of the Evening Grosbeak in this vicinity in the early part of January, 1890. All the evidence that I can collect goes to show that the birds arrived here about the 1st of January, and at least some of them remained until March.

In looking over my notes, I find an entry on January 20th, to the effect that the Evening Grosbeaks, a heretofore unknown bird in this vicinity, had been with us in large numbers for three weeks.

About January 1st, a boy brought me a bird that he said I might want for a specimen, as it had very bright plumage. The bird was new,

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to me, although I knew it to be a Grosbeak. It proved to be a male Evening Grosbeak, and was shot in the asylum grounds.

The birds remained with us several weeks, in fact I saw one early in March, feeding on mountain ash berries. In the asylum grounds they were to be found very constantly, in the tamarac and mountain ash trees, and several times I saw them in the tamarac with the Pine Grosbeaks, which were quite common in the winter of 1890.

On the 13th or 14th January, 1890, Mr. Geo. Nicol of Cataraqui, shot a male and female Grosbeak (Evening), and sent them to Mr. R. M. Horsey, who wrote a letter on the subject to the *British Whig*, January 17th, and Mr. Horsey corroborates my observations in regard to the time the birds remained with us, in the following note: "I have a specimen (male) given me by Sir Richard Cartwright's gardener, which he procured about the end of January, and which he shot at the "Maples," Sir Richard Cartwright's summer residence on the banks of the St. Lawrence, a short distance from Kingston, where I understood from him the birds remained until early in March, or towards the middle of the month."

In the asylum grounds the ash berries seem to have been the chief attraction, but the birds were not nearly so numerous with us as at the eastern part of the city, and along the banks of the St. Lawrence. The reason for their presence there was that the woods are full of red cedars, and Barriefield Common, on the eastern side of Kingston, is covered with junipers. The birds subsisted on the berries of the red cedar and juniper.

Mr. H. Stratford, taxidermist, tells me that the crops of the many birds he mounted, were invariably filled with the red cedar and juniper berries.

There is no record of any of the birds having been kept in captivity and I cannot find out how many specimens were procured, but Mr. Stratford, the taxidermist, mounted several for different persons, and Mr. Horsey had three. The birds were quite common, and little difficulty would have been experienced in securing a large number. In the asylum grounds I would not allow any of them to be destroyed, after the first had been shot.

Mr. Stratford tells me that shortly after the arrival of the Grosbeaks here, they were observed in Perth, (Lyn), and if you wish I can find out the particulars regarding this, as Perth, (Lyn), is further east than Kingston. My impression is that the migration took place from the west, as the dates that the birds were observed in the western part of Ontario, were certainly earlier than our dates.

I find that I made a slight mistake in my notes on Grosbeaks: instead

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of Perth I should have written *Lyn*, a place six miles west of Brockville.

Mr. Nicol of Cataraqui was driving near Lyn, when the Grosbeaks were here and saw a large flock of the birds. Two were also sent to Mr Stratford, from McDonald's Corners. Mr. Stratford mounted eleven Evening Grosbeaks in all, nine obtained from this locality, and two that were sent from McDonald's Corners, in the County of Lanark.

Dr. A. C. Bowerman, of Bloomfield, near Picton, Prince Edward County, writes as follows:

"I have the skin of a female Evening Grosbeak. They came about Christmas, and remained up to March, and the birds were quite numerous.

Mr. Elkington, taxidermist, brought me a bird about the 1st of March, which I skinned."—C. K. CLARK, M. D., Kingston.

During the thirty years I have lived in Guelph, I have never known a single specimen of the Evening Grosbeak having been taken.

The Pine Grosbeak, *Pinicola enucleator*, during that time has visited this section of the country several times, and the Rosebreasted Grosbeak, *Habia ludoviciana*, is comparatively plentiful in the woods of the surrounding country, but I am not aware of any of the Evening Grosbeak being seen in this vicinity.—JAS. GOLDIE, Guelph, Ontario.

With reference to that interesting flight of Evening Grosbeaks, in the winter of 1889-90. On turning up my notes I find the first record on January 21, 1890, when I saw for the first time, a pair of these birds alive. They were upon an orchard tree in the town. On the 24th, I received from my friend Mr. McIlwraith, of Hamilton, a pair of these beautiful birds in the flesh, and while examining them at my window I happened to look out and there upon the ground, under my very nose, was a pair of the beauties. I am almost ashamed to say I ran for my gun and shot them both. There were three more in one of the trees uttering a plaintive call note as if for their mates. Next morning on looking out I saw six of these birds either hens or young birds, found they were feeding upon the seeds of the *Robinia pseudacacia*, or common locust tree the pods of which strewed the sidewalk. The two pairs I mounted and have in my collection. In their stomachs I found only the above seeds. On February 20, five of them were still seen feeding upon the locust tree although they were occasionally seen upon the ground feeding. March 15, saw four hens or immature males. March 29, great snow storm, covers the ground six inches deep. Saw six Evening Grosbeaks feeding in the locust tree, which is the last record I have of them. During January, February, and March, 1890, I heard of these

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strange birds having been seen at different points, six or seven miles from here, and always the same habits reported, that they are rather sluggish in their habits, sitting quietly in the trees occasionally uttering their sad call note, but no attempt at a song. I may say that although I could have collected a number, I only took the one pair. From reports I must have heard of twenty-five or thirty birds in small parties, which could hardly have been the same lots that are in this section.—G. A. MACCALLUM, M. D., Dunnville, Ontario.

I have the assurance of Mr. Fletcher, Entomologist for the Agricultural Department of the Dominion of Canada, that none of these birds were observd at Ottawa.—W. BRODIE.

The first time I came across this rare visitant of southern Ontario was in the spring of 1855, in Glanford Tp., near Hamilton. There were five together on the ground, of which I shot two. This occurred after the snow had gone, or was nearly so, in early April.

I removed from that section and came to the northern part of Huron County a few years after. The first time I got one of these rare birds was in the winter of 1861. This occurred in the middle of February, and I had the skin for some years, but it was lost in a fire, this was a female. I saw several during the winter of 1861. The snow, however, was so deep in the bush that it was impossible to collect any. In the next year, 1862, several were seen as I was driving round in my cutter to visit sick people, also *Pinicola enucleator*, the Pine Grosbeak, was comparatively scarce. This I always found in swampy places, on scrubby pines, tamarac and spruce, and also I saw once an Evening Grosbeak sitting on a high bush cranberry, on the roadside within ten yards of me, pecking at the berries. This was in the township of Turnberry. In 1865, one of these birds was sitting high up on a soft maple, and I shot it.

In 1874 one was shot by me but much torn up with heavy shot, a male.

In 1889 quite a number were found all over this section during the months of January and February, several of which I saw in the possession of Dr. Tennent, and Mr. Anderson.

In 1891 I shot one in Kinloss Township. It was on a tree, by the banks of a creek, February 13. It may seem strange, yet on not one occasion did I ever hear any notes made by this bird.—JOHN H. GARNIER, M.D., Lucknow, Ontario.

No evidence of an eastern migration was obtained, but several observers reported flocks flying westward along the lake shore. The consensus of opinion seemed to be that the birds which came first, remained in or around the city until late in the spring, or were killed.

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A number of observers were of opinion that the birds frequented the same localities until the supply of food was exhausted. On the southern slopes of the hills north of the city and of the Don ravines, the snow soon melted away, and the fallen seeds of *Prunus*, *Crætagus* and *Fraxinus* were abundant under the trees, and of course the birds were found feeding on the ground.

The food of this bird in Manitoba is the seeds of the box elder, *Negundo aceroides*, (Nash) the seeds hang on the trees during the winter and are picked off by the birds, but although many pistillate trees of this species grow on the Don flats and hill sides, which were heavily loaded with fruit, the birds were not observed to feed on them, nor did any of the dissections reveal the presence of *Negundo* seeds.

The range of food as shown by stomach dissections was not large.

Seeds of *Robinia pseudacacia*, *Crætagus coccinea*, *Fraxinus americana*, *Pyrus acuparia*, *Prunus virginiana*, *Prunus serotina*, *Acer saccharinum*, *Hamamelis virginiana*, *Juniperus communis*, *Juniperus virginiana*, and although not shown by dissections, they were observed to feed on seeds of apples which were hanging on the trees. The birds freely entered the residential parts of the city, and fed on the seeds of the European mountain ash, an abundant ornamental tree. They were quite unsuspicious and tame, and were unmercifully and wantonly killed with clubs, catapults, revolvers, pea-rifles, and many were taken alive with a slip-noose attached to the end of a long stick. We have collected reliable information of 453 specimens, which were collected in and near Toronto, most of which were made into skins or mounted by taxidermists and students of ornithology, but the actual number killed must have exceeded 1000.

Several living pairs were collected and kept for some time in cages, but they did not pair. At this time, February 17th, 1892, we know of but one living specimen, a female, in excellent condition.—EDITING COMMITTEE.

Since last date given, no birds have been noticed at Toronto to date of going to print. November 25, 1892.

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CANADIAN WILD FLOWERS.

By D. W. Beadle, B.A., LL.B.

(Read 9th April, 1892.)

The purpose of this paper is to awaken an increased interest in our native wild-flowers, by shewing that they are worthy of a prominent place in our flower gardens, and thereby to rescue at least some of them from impending extermination.

Hitherto the floral embellishment of our lawns has been largely confined to the annual planting of tender exotics. This necessitates a yearly expenditure in the preparation of beds, procuring and setting out of plants and subsequent care. After planting, a considerable interval must usually elapse before sufficient growth can take place to make the bed an attractive object. When at length it attains to the fullness of its display, it is the same unvarying picture, presenting no new feature throughout the season, becoming even tiresome by reason of its uniformity. And at the first sharp frost of autumn all the brightness is suddenly extinguished, so that we are fain to have the plants removed out of our sight, and content ourselves with the bare brown earth prospect, until winter covers it with a mantle of snow.

But now a tendency is being manifested towards the adoption of a more natural system of flower gardening, a system that does not demand new plants every season; in which are no bare earth prospects through the spring and fall, nor pinched and shivering look of plants waiting for weather warm enough to enable them to put forth their flowers, nor tiresome monotony of forms and color, and at the last the sudden death of all in a night. In the natural system, the early flowers will begin to appear with the first mild days of spring, and from thence forward new forms and colors are appearing in continuous succession, so that each passing week some fresh object of interest is presented, and when the cooler days and frosty nights of autumn come, there will be no painful sense as of sudden death in the garden; Flora will but wrap her mantle of crimson and gold about her and gently sink into her winter slumber.

At this juncture, when tired of the artificial, public attention is being turned towards a system of flower gardening more consonant with nature, it seems opportune to direct attention to our wild-flowers, to shew to the general public the floral treasures of our own land, and awaken, if

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possible, a sense of the appropriateness of enriching Canadian flower gardens with the wealth of Canadian wild-wood beauty, inured to our Canadian climate, and waiting at our very doors to be employed to ornament our Canadian homes. Surely the flowers of our native land are more lovely in our eyes than those of any other. We gathered them in childhood, twined them in our playmate's hair, and linked them with all the joyous memories of youth, so that by the very richness of their associations they speak to our hearts as can those of no other land. Have not many of you, when taking a country outing, paused in your ramble at sight of some woodland flower, and while you looked, the shadow on life's dial fled many degrees backward, and you found yourself listening again to the merry tones of young voices once familiar, and could almost feel again "the touch of a vanished hand;" and as you turned reluctantly away, that simple modest flower had for you a loveliness that the most princely exotic can never possess?

Like the Red-man of the forest our wild-flowers are passing away, and before very long many of them will be gone. The settlement of the country with its attendant industries, must necessarily destroy the conditions favorable to their existence. The axe and the plow are doing their work, and not these alone, but the careless gatherer is pulling them up by the roots, as though anxious to exterminate them as soon as possible. The burning off of the dry leaves is also destructive to those plants, the roots of which lie near the surface; and when the ground is dry and the soil of a fibrous or peaty character, the fire will penetrate to a considerable depth, quite far enough to kill out even those plants that may be called deep rooted. And even when the plants are not roasted to death, the fire consuming the leaves lying on the ground robs them of the food which the decaying leaves supply, and of the moisture which these leaves retain.

What can be done to stay this destruction and preserve to us our native flowers from the extinction which threatens them? Canada has no botanic garden into which they might be gathered. "I speak this to our shame." Once the writer had hopes that a portion of the grounds of the Ontario Agricultural College would be used for an arboretum and garden, into which would be collected such trees as would thrive there, and at least the most interesting of our native plants. Such a collection was thought to be a desirable, if not an essential factor in the education of those designing to devote themselves to rural pursuits. Under the superintendence of a committee of the Fruit Growers' Association, appointed at the request of the Hon. S. C. Wood, then acting Commissioner of Agriculture, which was composed of Mr. Wm. Saunders, now

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Director-in-chief of experimental farms, Mr. James Goldie, of Guelph, an enthusiastic botanist, and the writer; plans were prepared and a commencement made, thus laying the foundation of such an institution. But there came a change of ministers, and with that a change of counsels, and the discharge of the committee. There is now no prospect of such an arboretum and garden being established in our day, nor for many a day to come. Hence, the only hope of preserving to those who will come after us the beautiful plants that now are scattered in wild-wood shade, by running stream, in marshy fen, on sunny bank, and in open prairie, seems to lie in the possibility of being able now to awaken in our citizens, and especially in those who with the writer claim this as the land of their birth, an interest in these wild-flowers as a means of beautifying the grounds about their dwellings.

In order to the awakening of this interest it will be necessary to substitute a more simple and natural taste in the place of that engendered by the bedding-out system so long in vogue, which demands masses of blazing color, ribbons of red, white and blue, and formal designs in flower or foliage in which there is not one touch of nature; yet this change will come, its dawn is already breaking. Deep down in the human heart there ever lives a chord that vibrates in unison with nature. It is made apparent by the desire so very commonly cherished by busy toilers in the marts of commerce to have a country seat in which they may spend a part of each year, and to which they may retire in life's evening. Let a fair trial of a natural system of gardening be made, it will then be found that it responds to this love of nature, that it gives a satisfaction and pleasure that apparent art is powerless to confer.

Further, it will be necessary to disabuse the public mind of a prevalent impression that the wild-flowers do not take kindly to civilization. One instance of their successful domestication is more potent than any argument. Fortunately such an instance is at hand, would that there were more. Mr. Jas. L. Hughes has 328 varieties of wild-flowers growing in his garden, and he states that "nearly every variety grows as well under cultivation as in its native locality, many of them do better." Could we have a few more such gardens, exemplifying the adaptedness of Canadian wild-flowers to the requirements of floriculture, there would be good ground to hope that such an interest might be awakened as would secure the cultivation and thereby the preservation of our most beautiful and desirable species.

The enumeration of all the wild-flowers that could well be employed in ornamental gardening would be but a wearisome repetition of names, yet it seems desirable to mention some of the most prominent, those most likely to interest the general public.

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Among the very first to bloom in early spring is the trailing Arbutus, *Epigæa repens*, putting forth its delicately rose-colored flowers, laden with a rich spicy fragranee, even before the snows have ceased to fall. It is a shade loving plant that would thrive under the trees that skirt so many of the city lawns. In this connection we may name the pretty little *Linnæa borealis*, a slender creeping evergreen that loves the cool shade. Its graceful nodding flowers, purple and white, and sweetly fragrant, appear in June. It was a special favorite of the great Swedish botanist, and therefore bears his name. Also the Winter-green, *Gaultheria procumbens*, is most at home under the shade of evergreen trees. Its nearly white flowers appear in July, followed by bright red berries. *Mitchella repens*, as its name indicates, is a creeping plant, it thrives well in dry soils, is covered in June and July with white flowers that are pleasantly fragrant, followed by a profusion of bright scarlet berries which continue through the winter. This pretty plant is not only useful to hide the bare earth under trees, but its bright shining evergreen leaves set off with the scarlet berries, make it an appropriate Christmas decorative plant. We have yet another evergreen trailer bearing flesh-colored fragrant flowers in June, suitable for planting in dry soils, known by the name of Pipsissewa, *Chimaphila umbellata*. These and other evergreen plants, trailing in habit, and thriving best under the shade of over-spreading trees, could be made to contribute greatly to the charm of our lawns, not only by carpeting the earth beneath them, but by filling the air during their flowering season with grateful odors.

We have several very pretty *Anemones*. *A. hepatica* vies with the *Epigæa* in time of flowering. Its blue flowers running through many shades, sometimes white, are too well known to need description or words of praise. It is at home in partial shade. *A. patens, var. Nuttalliana*, has large purplish flowers in early spring. It prefers the open ground. *A. parviflora* gives us white flowers in May and June. *A. multifida* is more rare, its flowers are red, opening in June. *A. Pensylvanica* continues to display its white flowers from June to August.

It is quite possible that we have four varieties of *Trillium*, though the writer has not seen the white nodding *T. cernuum*, nor the painted *T. erythrocarpum*, (*T. pictum Pursh.*) The flowers of the latter are white, marked with purple stripes at the base of each petal. With *T. grandiflorum*, the large white flowers of which are so showy, remain so long in perfection, turning before they disappear to light rose-color; and with *T. erectum*, the dark purple flowers often intermingled with the white blooms of *T. grandiflorum*, you are all familiar. Our European cousins know how to appreciate their beauty, so much so that large numbers have been shipped to the other side of the Atlantic.

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Dicentra gives us two interesting species. *D. cucullaria* prefers rich soil and moist shade. The leaves are finely cut, indeed the whole plant has a most delicate appearance. The flowers, white tipped with light yellow, are at once pretty and odd. *D. Canadensis* blooms in May. The heart-shaped flowers, greenish white tinged with rose, have the fragrance of hyacinths.

We are rich in Violets. The season of bloom extends from early spring until autumn. *V. rotundifolia* and *V. pubescens* are yellow, the round-leaved flowering in spring, the other in early summer. *V. cucullata* varies greatly both in the size and color of its flowers, which is almost of every shade, from nearly white to the deepest blue. The flowers appear in early spring. *V. canina, var. sylvestris,* (*V. Muhlenbergii*) flowers light blue, and *V. Canadensis*, flowers white, upper petals often tinged with violet on the under side, continue in bloom all summer. *V. sagittata* and *V. pedata* are large flowers, the latter especially, its flowers being an inch in breadth. They both vary from light to dark blue. *V. pedata* is a most elegant plant, its flowers have a delicate and agreeable fragrance, and last long in perfection. In grace and beanty it is the rival of any exotic. It thrives best in a somewhat sandy soil. The white flowered *V. blanda* is also, though faintly, sweet scented. All of these violets are of easy culture, take kindly to the garden, and increase rapidly.

Two species of *Lobelia*, *L. cardinalis*, the flowers a most brilliant scarlet, and *L. syphilitica*, light blue, are late summer bloomers, the former exceedingly showy, both of easy cultivation, care being taken to plant the *cardinalis* in moist loam.

Our Lilies, *L. Philadelphicum, superbum* and *Canadense*, are long since to be found in every collection of hardy lilies that makes any pretense to completeness.

Campanula rotundifolia, the only one we have that is perennial, unless *C. linifolia* be accepted as a species, is well-known as the Harebell of Europe. It is a pretty graceful plant, grows well in any good garden soil, and yields its bright blue flowers in profusion. This is the flower referred to by Sir Walter Scott:

> "E'en the slight Harebell raised its head
> Elastic from her airy tread."

We have a large number of pretty things belonging to the Orchis family, several of them of such showy appearance as to make them desirable ornaments of the garden. By giving attention to the preparation of the bed, selecting a cool well shaded locality, and incorporating

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with the soil a supply of peaty loam and sphagnum, they can be grown with most gratifying success. They endure any amount of cold, but perish if subjected to severe drouth. Once started they will take care of themselves, yearly increasing in strength and beauty. To the student of nature they are all exceedingly interesting, especially in contrivances found in many to secure cross-fertilization. The following are named as being the most interesting to the decorative gardener: *Orchis spectabilis*, flowers pink purple, undivided lip white, in May. *Habenaria ciliaris*, bright orange yellow, bordered with a long copious fringe, July to September; *H. blephariglottis*, flowers white and also fringed, July; *H. fimbriata*, flowers purple, fringed, June. *Cypripedium candidum*, flower small, white, May or June; *C. parviflorum*, flowers about an inch long, bright yellow and fragrant, June; *C. spectabile*, the most showy of them all, about two feet high, flowers two inches long, three or more on a stalk, white, marked with purplish pink, and last a long time in perfection.

The foregoing will suffice to indicate that we have native plants worthy of a place in ornamental gardening. It is necessarily very incomplete. We have but touched the hem of our Flora's robe. Intentionally only those have been mentioned that seemed most likely to interest those who plant for ornament, and of such only a small part, and that part wholly confined to the flowering plants. Yet, planting for ornament in the eye of one who is a true lover of nature, will not be confined to these. There is marvelous beauty to be found among the flowerless plants. In many of the lawns are to be found places just the thing for ferns. Can anything be prettier than a well arranged fern-border? and we have not far to seek in order to fill such a border with Canadian ferns of graceful form and charming beauty. Can we not do something to quicken into action the love of nature that all possess in greater or less degree, so that the beautiful things indigenous to our climate shall be cherished, not neglected because they are Canadian?

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ST. COLUMBA OR COLUM CILLE.

BY REV. NEIL MACNISH, LL.D.

(Read 28th November, 1891.)

In his Essay on Gaelic literature, language and music, which is to be found in Fullerton's Scottish Highlands, Dr. MacLauchlan, the talented translator and editor of the Dean of Lismore's Book, thus writes: "It has been often said that the Literature of the Celts of Ireland was much more extensive than that of the Celts of Scotland; and that the former were in fact a more literary people. Judging by the remains that exist, there seems to be considerable ground for such a conclusion. Scotland can produce nothing like the MS. collections in Trinity College, Dublin, or the Royal Irish Academy, . . . We have our doubts as to Ireland having furnished Scotland with its Gaelic population, and we have still stronger doubts as to Ireland having been the source of all the Celtic Literature which she claims. . . . To say that a work is Irish, because written in what is called the Irish Dialect, is absurd. There was no such thing as an Irish Dialect. The literary dialect said to be Irish, is nearly as far apart from the ordinary Gaelic vernacular of Ireland as it is from that of Scotland." To St. Columba and his successors on the Island of Iona, the honour belongs of having during several centuries formed a constant link of connection between the Gaels of Ireland and the Gaels of Scotland. Than the Island of *I* or Hy, or Iona or Icolumkill, there is no place more famous or dearer to all lovers of enlightenment in the earlier centuries of the Christian faith. Iona continued for many generations to be the grand centre whence radiated to various portions of Great Britain, as well as of the Continent of Europe, intellectual and religious light. Dr. Samuel Johnson, who certainly cannot be accused of having or of entertaining any large exuberance of affection for the Scottish Highlands, followed the promptings of his more serious and sensible nature, and thus wrote with regard to Iona: "We were now treading that illustrious island which was once the luminary of the Caledonian regions, whence savage clans and roving barbarians derived the benefits of knowledge, and the blessings of religion. Far from me and from my friends be such a frigid philosophy as may conduct us indifferent and unmoved over any ground which has been dignified by wisdom, bravery or virtue. That man is not to be envied whose patriotism would not gain force upon the plains of

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Marathon, or whose piety would not grow warmer among the ruins of Iona."

In the preface to Lluyd's Archæologia Britannica which was published in 1707, there are to be found complimentary addresses in Latin verse by Gaelic ministers. Those addresses extol the zeal and learning of the Welsh philologist, and are couched in Hexameters and Alcaics and Sapphics of such tuneful accuracy as to show that the ministers of that time were good classical scholars. The Rev. John MacLean, at that time minister of the parish of Kilninian, Mull, bestowed warm commendations in Gaelic verse on the father of Celtic philology. With regard to the antiquity of Gaelic, he thus writes:

"Si labhair Padric 'nninse Fail na Riogh
'San faighe caomhsin Colum naomh tha'n I;
Na Francigh liobhta 'lean gach tir a mbeus
O I na ndeori, ghabh a mfoghlum freimh.
B'i bhoide muinte' Luchd gach duthch is teangth.
Chuir Gaill is Dubhghaill chuic'an tiulsa' n'clonn,
Air Sar o Liath biodh adh is cuimhnn' is buaidh,
Do rinn gu hur a dusgadh as a huaimh."

Those verses have been happily rendered into English verse:

"T was Gaelic Patrick spoke in Innis-Fayl
And sainted Calum in Iona's Isle,
Rich polished France where highest taste appears,
Received her learning from the Isle of tears.
Ie alma mater, of each tribe and tongue
Once taught for France and Germany their young.
Great praise and thanks, O noble Llwyd be thine,
True learned patriot of the Cumbrian line!
Thou hast awaked the Celtic from the tomb,
That our past life her records might illume."

The Island of I or Iona or Icolumkill, is on the Western Coast of Argyllshire. A few miles north of it is the Island of Staffa with its wonderful cave, which bears the name of Fingal's Cave. The Giant's Causeway in the north of Ireland may be regarded as a continuation or a reproduction of the same basaltic and many sided columns which go to form Fingal's Cave, though seventy or eighty miles intervene between Staffa and the north of Ireland. North-east of Iona lies the Island of Ulva, famous as the birthplace of the ancestors of the illustrious David Livingstone. Not far from Iona is a group of islands, forming a parish to which the designation, the parish of small isles is given—a parish of which the Rev. Zachary Macaulay, the great-grandfather of Lord Macaulay the English historian, was once minister. To the north-east of Iona lies Morven—a name which every lover of Gaelic associates with

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the MacLeods than whom no more patriotic or elegant Gaelic scholars have appeared in this century. Mull, Colonsay, Islay, Jura, Tiree—such are the names of other islands that lie around Iona—islands from which men have repeatedly gone forth, who achieved no small success and renown as well in the strife of arms as in the vigorous prosecution of the peaceful industries and professions of life. Iona is thus situated in the heart of classic ground. It belongs to the Ducal House of Argyll. The present Duke, true to his varied culture, has shown a praiseworthy interest in Iona, and in the preservation of those buildings and graves and monuments which, calling up as they do sacred memories and hoary occurrences, have survived the rude Vandalism of the Scandinavians.

Very great ingenuity has been expended for the purpose of determining what the meaning or derivation of the word Iona is. There can be no doubt that I, pronounced in English *ee*, is the original form of the name Iona. The inhabitants of Iona and of the surrounding islands always apply the name I to the island in question, and thereby furnish the best evidence as to what the original name of the island was. I is a Gaelic word for island, I, *Innis*, *Innsean*. Flathinnis, a common appellation for *Heaven*, properly signifies the island of the brave or noble men. Latin writers of the time of St. Columba spelled I, the name of Iona, *Hy*, *Hia* *Hya*, and formed the adjective *Hyensis*, *Huensis*, from it. It appears that the designation *Ioua insula* was frequently applied to Iona. It is said that Colgan, imagining that Ioua was an incorrect form of Iona, substituted the latter word for the former, and thus led the way to the general employment of the term Iona. Fordun supposes Iona to be an adaptation of St. Columba's Hebrew name, "Insula I vel Iona Hebraice quod Latine Columba dicitur sive I Columkill." Adamnan thus writes: "There was a man of venerable life and blessed memory, the father and founder of monasteries, having the same name as Jonah the prophet; for though its sound is different in the three different languages, yet its signification is the same in all. What in Hebrew is Jonah, in the Greek language is called περιστερα, and in the Latin Columba." It has likewise been sought to resolve *Iona* into I *thonn*, the Isle of the waves, and into I shona, the blessed or happy Isle. It seems altogether better to accept the interpretation that the original word or name I was sometimes written *Ioua*, and that by an easy process *Ioua* came to be written Iona. The island has come to bear another name, Icolumkill, in consequence of the intimate and honourable connection which St. Columba had with the fame and fortunes of the island. *Calum-cille* is the common appellation which St. Columba bears among the Gaels of Scotland. The word *kill*, *ceall*, *cill*, is derived from the Latin term *cella*, which among its other significations, has the meaning *shrine* or *chapel*. Ceall

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in Irish means Church, a cell or place of retirement. It was customary in Scotland until a comparatively recent period, to have a Burying-ground attached to the Church. The ruins of ecclesiastical buildings can be easily detected in the old Burying-grounds of Scotland. The word *ceall* or *cill* has now come to designate the grave or Burying-ground. Tha è anns a 'chill, he is in the grave, is a phrase that is of common application to indicate that an individual is dead. *Calum cille* was eminently the apostle of the Picts. He was the leader of a galaxy of Celtic abbots, who with Iona as the centre of their operations in Scotland or in Albin—for Scotia was in those days an appellation of Ireland—exercised a deep and wide-spread influence over a large portion of Scotland, as well as indirectly over the north of England, in addition to keeping in close and constant familiarity the Gaels and Gaelic of Ireland and Scotland.

St. Columba was born at Gartan in the County of Donegal, on the 7th December, 521. He was of royal lineage. His genealogy runs thus: he was the son of Felim, the son of Fergus, the son of Conall the son of Neil of the nine hostages—Niall naoi' ghiallach—son of Eochaidh, son of Murdoch, son of Cairbre, son of Cormac, son of Airt, son of Conn of the hundred battles, son of Herimon, son of Mili of Spain. His mother whose name was Eithne was descended from an illustrious King of Leinster. It was thus in a very lordly and influential station that St. Columba was born. At his baptism he received the name Colum, to which the addition of *cille* (the genitive of ceall) was subsequently made in reference to his diligent attendance at the Church of his youthful associations. When he arrived at a sufficient age, he went to Moville (Magh bhile, the lip or margin of the plain) a place that is well known to Canadians who cross the Atlantic. He there became the pupil of the celebrated Bishop St. Finnian. From Moville he proceeded to Leinster, where he was for some time under the instruction of an aged bard called Gemman. After he left Gemman he entered the Monastery of Clonard (cluan ard) over which St. Finnian the founder then presided. St. Cargall, St. Ciaran, Cainneach, were his fellow-students in the Monastery; and subsequently at Glas Naoidhean now Glasneven near Dublin. About the year 553 he founded Dair magh, the plain of the oaks, which was his principal and most famous institution in Ireland. In Leabhar Buidhe Lecain, this account is given of the reason which induced St. Columba to leave Ireland, and to take up his abode in Scotland. On one occasion St. Colum Cille paid a visit to St. Finnen, of Drom Finn in Ulster, and while on this visit he borrowed St. Finnen's copy of the Psalms. He made a copy of the book by remaining in the Church after the people had left it. He was

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detected, and when an appeal was made to the monarch of Erinn-Diarmaid MacFerghusa Gerrbheoil, he gave the remarkable judgment which to this day remains a proverb in Ireland, when he said *Le gach boin a boinin*, i.e. to every cow belongeth her little cow or calf, and in the same way to every book belongeth its copy; and accordingly, said the king, the book that you wrote, O Colum Cille! belongs by right to Finnen. That is an unjust decision, O Diarmaid! said Colum Cille, and I will avenge it on you. Complications afterwards came in connection with the rude conduct of Diarmaid, who seized a son of the King of Connacht, and put him to death for a certain offence, and in violation of the immunity which the young prince might claim, forasmuch as he was in the arms of St. Colum Cille. Colum Cille with his great influence had much to do in inciting and in raising an army to oppose Diarmaid King of Ireland. The result of the conflict was that a battle was fought in which the royal army was routed with a great loss, and the monarch returned discomfited to Tara. Diarmaid soon after made his peace with St. Colum Cille, and his friends. The Saint to relieve his conscience went to confession to St. Molaise of Damhinis. St. Molaise then passed upon him the penitential sentence to leave Erinn forthwith, and never again to see its land. This penance St. Colum soon performed by sailing to the coast of Scotland with a large company of ecclesiastical students and others. They landed on the island of I or Hy. Eugene O'Curry tells us that in O'Donnell's life of St. Colum Cille regarding the Cathach "the Cathach indeed is the name of the book on account of which the battle was fought, and it is it, that is, Colum Cille's high relic in Tir Conaill: and it is ornamented with silver, and it is not lawful to open it; and if it is carried three times to the right around the army of the Cenel Conaill when going to battle, it is certain that they would come out of it with victory: and it is on the breast of a Comharba, or a priest without mortal sin upon him (as well as he can), it is proper for the Cathach to be at going round that army." We are informed by Bede that "in the year of our Lord 565, when Justin the younger, the successor of Justinian had the government of the Roman Empire, there came into Britain a famous priest, and abbot, a monk by habit and life, whose name was Columba, to preach the word of God to the provinces of the Northern Picts. Columba came into Britain in the ninth year of the reign of Bridius who was the son of Meilechon and the powerful king of the Pictish Nation, and he converted that nation to Christ by his preaching and example whereupon he also received from them the aforesaid Island, i.e. I, for a Monastery." In the Anglo-saxon Chronicle, it is stated that in 565 "Columba a mass priest came to the Picts, and converted

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them to the faith of Christ. They are dwellers by the northern mountains and their king gave him the Island which is called Ii, Iona. Therein are few hides of land, as men say. There Columba built a Monastery, and he was Abbot there thirty-seven years, and there he died when he was seventy-two years old."

The ecclesiastical influence and government of St. Columba extended very widely. The names of no less than thirty-seven Churches are given which were founded by him in Ireland, and in which his memory was specially venerated. In Londonderry, Sligo, Louth, Kildare, Dublin Longford, Kilkenny, Galway, and other portions of Ireland, Churches and Monasteries were founded by Columba, so that a very large portion of Ireland was visited by him, and acknowledged his ecclesiastical supremacy. In the kingdom of the Scots, there were thirty Churches or Chapels that were more or less intimately associated with the name of Columba. Among the Picts there were twenty-one Chapels with which Columba had a similar relationship. In the Orkney Isles, in Caithness, Sutherland, Nairn, Aberdeen, Inverness, Perth, Renfrew, throughout the Hebrides and other portions of Scotland, Churches were founded by Columba and his followers, or at least owed allegiance to the apostle of the Picts. From the fact, therefore, that the influence of Columba and his successors in the Abbacy of Iona, extended so widely over Ireland and Scotland, may we not with all fairness draw the inference—that the Irish and Scottish Gaels were thus brought very closely together; that as they owed allegiance to the same ecclesiastical superiors, their literature must have been largely identical; that the education which was given in the Irish and Scottish monasteries must have been very much the same; and that the Irish and Scottish Gaels were almost, if not in reality one people, having the same literature and speaking the same language?

That conclusion which seems to be legitimate enough, derives strength from the consideration, that the abbots of *Iona* who came after Columba, were many of them at least of Irish birth, were educated in Ireland, and held honourable and responsible positions in the Churches and Monasteries of that country before they succeeded to the Abbacy of Iona. The annals of Ireland record the names of forty-nine abbots or Coarbs of Iona, who exercised the functions of that office from 565 or 563, when Columba took possession of Iona, until 1198 or 1202, when the last abbot, *Giollacrist*, of whom any reliable account is given, wielded the power of abbot. A radical change passed about that time over the ecclesiastical and political affairs of Scotland; and with that change, the great supremacy of Iona ceased.

For more than six hundred years, abbots of Irish birth and education

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bore sway in Iona, and contributed very largely towards making the Gaels of Ireland and Scotland, one in language, one in literature, and one in religious belief. In the Monasteries of Iona, Oransa, Archchattan, Uist, Melrose, etc., the Gaelic as well as the Latin language was cultivated. In Iona itself there must have been numerous MSS. of a very valuable character. So far as Scotland, however, is concerned, little or nothing of what must have been an extensive and valuable literature has escaped the ravages of the Scandinavians, and the spoliation of Edward I. in 1296, who with ruthless severity gave orders for the destruction of the records and all those monuments of antiquity which might preserve the memory of the independence of Scotland, and refute the English claims of superiority. To complete his task of literary vandalism, the same monarch subsequently ordered such records or histories as had escaped his former search—the MSS. of Iona doubtless among the rest—to be burnt or otherwise destroyed. Aikman, the translator of Buchanan's History of Scotland, remarks in the preface, "That he has the firm conviction that Buchanan had the use of records which now no longer exist." In foot-notes he also remarks: "I cannot refuse my belief to the assertion that Edward the I. did carry away a number of valuable records pertaining to this period—the loss of which is irretrievable. . . . It cannot be denied that Cromwell swept the country of whatever documents he thought of value. That Edward I. carried away the records of Scotland is allowed, that he preserved whatever suited his own purpose and that we have a list of them is also not denied. . . . What Cromwell carried off cannot be ascertained, but this much is known that several large hogsheads full of papers connected with Scottish history which had been carried out of the kingdom, were shipwrecked in the time of Charles II., in their passage from London to Scotland."

Eugene O'Curry remarks, "That we have three lives of St. Colum Cille written on vellum: one in Leabhar mor Duná Doighre, in the Royal Irish Academy; one in the Book of Lismore; and O'Donnell's great life of his patron saint and illustrious relative, now in the Bodleian Library at Oxford." Cuimine Ailbhe, or as Adamnan writes, Cummeneus Albus, who was the seventh abbot of Iona, 657-669, gathered into a small book the leading incidents in the life of Columba: De Virtutibus Sancti Columbae. Adamnan who was the ninth abbot, (679-704) wrote another life of St. Columba. It is written in Latin and is divided into three books. Alcuin places Adamnan in the same category with the most eminent men of his nation.

Patricius, Cheranus, Scotorum gloria gentis,
Atque Columbanus Congallus, Adamnanus atque,
Praeclari patres Morum Vitaque Magistri.

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The candid reader of Adamnan's life of Columba cannot receive as undeniable truth all the prophecies and miracles which he ascribes to Columba. Even the Apostles of Jesus Christ had no higher or stronger supernatural gifts than are continually assigned to Colum Cille by Adamnan. We must assign to the credulous spirit of that age much of what is marvellous in the work of Adamnan. In his preface to the third book, he adds that in the first book, he related some of the prophetic revelations which were made to Columba; that in the second book, he recorded the powerful miracles which the blessed man wrought; and that in the third book he will describe the apparition of angels which either Columba received regarding others, or others saw regarding him. That the tenor of Adamnan's life of Columba may be better understood, I shall make a few citations from it. As a specimen of the prophetic power of the Saint, his prophecy regarding the poet Cronan may be cited. "At another time, says Adamnan, as the Saint was sitting one day with the brothers beside Loch Cé (Lough Key in Roscommon) at the mouth of the river called in Latin Bos (Boyle), a certain Scottish Poet came to them, and when he had retired after a short interview, the brothers said to the Saint: Why didst thou not ask the Poet Cronan before he went away, to sing us a song with accompaniment according to the rules of his profession? the Saint replied, why do you even now utter such idle words? how could I ask that poor man to sing a song of joy who has now been murdered, and thus hastily has ended his days at the hands of his enemies? The Saint had no sooner said these words than immediately a man cried out from beyond the river. 'The poet who left you in safety a few minutes ago, has just now been met and put to death by his enemies.' Then all that were present wondered much and looked at one another in amazement." With regard to the miraculous power which St. Columba wielded, Adamnan writes, "Our belief in the miracles which we have recorded but which we did not ourselves see, is confirmed beyond doubt by the miracles of which we were eyewitnesses; for on three different occasions we saw unfavourable gales of wind changed into propitious breezes." As the account which Adamnan has given of the closing scenes in the life of Colum Cille has been very much admired, I shall make a few extracts from it. "In the end then of this same week, that is, on the day of the Sabbath, the venerable man and his pious attendant Diormit went to bless the barn which was near at hand. When the Saint had entered in and blessed it and two heaps of winnowed corn that were in it, he gave expression to his thanks in these words, saying: 'I heartily congratulate my beloved monks that this year also I am obliged to depart from you. You will have a sufficient supply for the year. This day in the Holy Scriptures is called the

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Sabbath, which means rest, and this day is indeed a Sabbath to me; for it is the last day of my present laborious life, and in it I rest after the fatigues of my labours, and this night at midsummer, which commenceth the solemn Lord's Day, I shall according to the saying of Scripture, go the way of our fathers. For, already my Lord Jesus Christ deigneth to invite me, and to Him I say in the middle of this night shall I depart at His invitation, for so it hath been revealed to me by the Lord Himself." The attendant hearing those sad words began to weep bitterly, and the Saint endeavoured to console him as well as he could. Then leaving this spot, he ascended the hill that overlooketh the Monastery, and stood for some little time on its summit, and as he stood there with both hands uplifted, he blessed his monastery, saying: 'Small and mean though this place is, it shall be held in great and unusual honour, not only by Scottish kings and people, but also by the rulers of foreign and barbarous nations and by their subjects. The saints also of other Churches shall regard it with no common reverence.' After those words he descended the hill, and having returned to his Monastery sat in his hut, transcribing the Psalter, and coming to the verse of the 33rd Psalm, (English version 34th Psalm), where it is written: They that seek the Lord shall want no manner of thing that is good. 'Here,' said he, 'at the end of this page I must stop, and what follows let Baithue write.' Then as soon as the bell tolled at midnight, he rose hastily and went to the Church, and running more quickly than the rest he entered in alone, and knelt down in prayer beside the altar. At the same moment his attendant Diormit, who more closely followed him, saw from a distance that the whole interior of the Church was filled with a heavenly light in the direction of the Saint, and as he drew near to the door, the same light he had seen, and which was also seen by a few more of the brethren standing at a distance, quickly disappeared. Diormit, therefore, entering the Church cried out in a loud voice, 'Where art thou Father?' and feeling his way in the darkness, as the brethren had not yet brought in the lights, he found the Saint lying before the altar, and raising him up a little, he sat down beside him and laid his holy head in his bosom. Meanwhile, the rest of the monks ran in hastily in a body with their lights, and beholding their dying father burst into lamentations, and the Saint as we have been told by some who were present, even before his soul departed, opened wide his eyes and looked round him from side to side with a countenance full of wonderful joy and gladness, no doubt seeing the holy angels coming to meet him. Diormit then raised the holy right hand of the Saint that he might bless his assembled monks, and the venerable Father himself moved his right hand at the same time as well as he was able, that as he could not in words while his

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soul was departing, he might at least by the motion of his hand, be seen to bless his brethren; and having given them his holy benediction in this way, he immediately breathed his last. After his soul had left the tabernacle of the body, his face still continued ruddy and brightened in a wonderful way by his vision of the angels, and that to such a degree that he had the appearance not so much of one dead as of one alive and sleeping. Meanwhile the whole Church resounded with loud lamentations of grief."

The very intimate relationship which obtained during many centuries between the Gaels of Scotland and the Gaels of Ireland, can be further exemplified by the prevalence of names of persons and places—names which were derived from prominent Irish Ecclesiastics who were wont to visit Scotland or to reside in that country.

From Calum comes Malcolm, *Maol*, a servant, and Calum, the servant of Columba.

MacCallum, MacGhille Chaluim, the son of the servant of Columba.

Paterson, MacGhille Phadruig, the son of the servant of Patrick.

MacLennan, MacGhille Fhinnein, the son of the servant of St. Finnan.

MacLellan, MacGhille Fhoalain, the son of the servant of St. Fillan.

MacMillan, MacMhaoilaon, the son of the little servant or of the bald one.

Very frequent in Argyllshire at least is the occurrence of names of Churches and parishes, and places which have an unmistakable connection with Irish ecclesiastical dignitaries.

If we begin at the south of Kintyre or at that portion of Argyllshire which is within easiest reach of Ireland, we shall find that Irish names are continuously present.

Sanda, Sancti Adamnani Cella: the Cell or Church of St. Adamnan. MacCulloch in his Highlands and western Isles of Scotland, observes that Sanda was a common station for the Scandinavian Fleets, during the contest so long ago carried on for the possession of Cantyre, and the neighbouring islands. The name *Avona* or *Avon* by which it was known is a corruption of the Danish *hafn*, a *haven*.

Kilellan, the cell or church of St. Fillan.

Killonan, the cell or church of St. Adamnan.

Kilkerran, the cell or church of St. Ciaran.

Kilchriost, the cell or church of Christ.

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Kilkenzie, the cell or church of Cuineach or Coinneach.

Killean, the cell or church of St. John.

Kilcalmonell, the cell or church of Colum Cille.

Kilchoman, the cell or church of Caomhan.

Kilmartin, the cell or church of St. Martin.

Kilmichael, the cell or church of St. Michael.

Kilbride, the cell or church of St. Bridget.

Kilmory, the cell or church of Mary.

Kilfinnan, the cell or church of St. Finnan.

Kilmacolm, the cell or church of Calum Cille, is the name of a place near Port Glasgow.

Kirkholm, the kirk of Calum Cille, is the name of a place in the south of Scotland.

Inchcolm, the island of Calum Cille.

In addition to Iona, there were other islands in the neighbourhood which were under the immediate control of Columba and his successors. It is difficult to identify all the islands that are mentioned by Adamnan, owing to the difference between the Latin names which he gives to them, and the Gaelic names by which they are better known. On *Tiree*, a flat island west of Iona, there was a Monastery at *Magh Luinge*, or at the plain of the ship. Adamnan gives to Tiree the designation of *Insula ethica*. Various derivations have been assigned for the word *Tiree*. Some have maintained that the second Gaelic syllable *ithe* means island; and that therefore, *Tiree* means the land of the island; for there can be no doubt that the first syllable *tir*, signifies *land*. Others suppose that the second syllable stands for Aodha or Hugh, and that thus Tiree means the land of Hugh—an explanation which finds its counterpart in Tirhugh in Donegal. In consequence of its great flatness, Tiree has been styled Ruigheachd barr fo thuinn.

In the number of the Teachdaire Gaidhealach for January, 1831, there is a beautiful poem bearing the name Iul an Eileanaich, and having reference to Tiree, and to the difficulty of seeing it from even a short distance when the storm is raging and darkness is on the deep. There is in Irish a word *ith*, which signifies corn. From *ith*, *ioth*, *eatha*, *etha*, Adamnan doubtless formed the adjective *ethica*, so that his name of Tiree *Insula ethica*, means the island of the corn, or the productive island, and that the correct explanation of Tiree is tir and ithe, the land ofth e corn.

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The Topography of Iona furnishes an indissoluble link between the Gaelic of modern days and the Gaelic which Calum Cille and his monks and their successors were wont to speak.

It is only natural that the names of places should be subjected to an imperceptible process of polish and attrition, as the language to which they belong is undergoing development; because such words are in continual use and are modified according to the growth of language. There can be no greater difference between the names of places in Iona as they were wont to be pronounced by Calum Cille and his successors, and as they are pronounced by the modern Gael, than obtains between the robust and rugged verses of Chaucer, and the musical and polished rhythm of the poems of Tennyson. Among the topographical names of Iona are these:

Aird, height.

Am bealach mor, the large gap or opening.

Blar buidhe, the yellow plain.

Carnan buidhe, the yellow heap.

Carn cul ri Eirinn. The heap with its back to Ireland.

Carraig a' Chaolais, the rock of the straits.

Cladh an Diseart, the cemetery of the deserted place.

Cnoc an tobair, the hill of the well.

Cnoc na h-analach, the hill of the breath, the steep hill.

Dusgeir, the black rock.

Eilean nan con, the island of the dogs.

Fang Mhaolain, the enclosure of the brow of the hill.

Goirtean Tomhair, the field of protection.

Iomaire nan rîgh, the ridge of the kings.

Loch Staonaig, the loch of the juniper berry.

Cnoc Odhrain, the hill of Odhran.

Reilig Odhrain, the burying-place of Odhran.

Port a' churraich, the harbor of the Coracle.

Maol nan uan, the bare place of the lambs.

Sron Iolaire, the eagle's nose.

Sruth a' mhuillinn, the stream of the mill.

Tigh an Easbuig, the Bishop's house.

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Tobar na h-aoise, the well of age.

Uamh an t-seididh, the cave of blowing.

Uamh nan calman, the cave of pigeons.

Uamh na Caisg, the cave of Easter.

An uiridh riomhach, the splendid bed.

According to Adamnan, Columba was much devoted to writing. Three Latin Hymns are attributed to him. In the Burgundian Library at Brussels, there is a collection of some fifteen poems which bear his name. In the Bodleian Library at Oxford, there is a manuscript which it is said, "embraces everything in the shape of Poem or fragment that could be called Columba's, and that industry was able to gather together at the middle of the sixteenth century." A collection bearing the name, The Prophecies of St. Columb'Kille, was published in Dublin in 1856. Competent scholars, like Eugene O'Curry, strongly maintain that many of the poems which bear the name of Colum Cille are forgeries, and are on grounds of internal evidence to be assigned to a comparatively modern date. The Altus Prosator—Hominum Sator atque Deorum—is the name of a celebrated poem or hymn, which was written by St. Columba in Iona in honor of the Trinity, when the messengers of Pope Gregory came to him with the great cross and other presents. A careful edition of the *Altus* has been published by Dr. Todd, one of the best Irish scholars of our time.

In Leabhar na h-Uidhri, a copy of which is in my possession, Amra Colum Cille or the elegy of the poet Dallan Forgaill on the death of St. Columba, is contained. There is also a poem of eight verses which is attributed to St. Columba himself. It begins with the words, Dia ard airlethhar, May the High God advise us.

The Gaels of Scotland are familiar with the sayings which have been assigned to St. Columba regarding women. "Far am bi bo, bithidh bean, agus far am bi bean, bithidh mallachadh. Where a cow will be, there will be a woman, and where a woman will be, there will be cursing." It is said that Columba compelled the workmen, who were employed by him in the erection of various buildings in Iona, to reside on the shore of Mull, that the female members of their families might not come to Iona.

His well known prophecy with regard to the future fortunes of Iona has been thus happily paraphrased:

An I mo chridhe, I mo ghraidh,
An aite guth manaich, bithidh geum ba,

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Ach mun tig an saoghal gu crioch,
Bithidh I mar a bha.

O sacred dome and my beloved abode!
Whose walls now echo to the praise of God;
The time shall come when lauding monks shall cease,
And howling herds here occupy their place.
But better ages shall hereafter come,
And praise re-echo in the sacred dome.

Tradition has it that forty-eight Scottish kings, four Irish monarchs and eight Norwegian princes were interred in Iona, and that so marked a preference for Iona as a place of interment was the result of this prophecy of Columba.

Seachd bliadhna roimh 'n bhrath,
Thig muir, thar Eirinn re aon trath;
'S thar Ile ghuirm ghlais,
Ach snamhaidh I Cholum clairich.

Seven years before that awful day
When time shall be no more,
A watery deluge shall o'ersweep,
Hibernia's mossy shore.
The green clad Islay too shall sink,
Whilst with the great and good,
Columba's happy isle shall rear
Her towers above the flood.

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DÉNÉ ROOTS.

BY THE REV. FATHER A. G. MORICE, O.M.I.

(Read 21st November, 1891.)

I.—INTRODUCTION.

Comparative Philology considered as a distinct science cannot boast of a very ancient origin. As late as a hundred years ago, it was still in its infancy. Of course the study of languages for the sake of philological deductions had been prosecuted long before with varying success. As far back as A.D. 1563, Pigafetta, the naive chronicler of Magellan's discoveries, enriched his narrative with three vocabularies of foreign tongues*, and his example was followed by some later navigators. Missionaries also walked in his footsteps, though they generally paid more attention to texts than to words, some of them concentrating their efforts towards the collecting of the Lord's Prayer in as many languages as possible. Yet it is to Leibnitz that we must look for the first author of repute who applied himself to the systematic study of foreign tongues with a view of deducing therefrom ethnological conclusions. "Je trouve," he says in a letter to Father Verjus,† "que rien ne sert d'avantage à juger des connexions des peuples que les langues. Par exemple, la langue des Abyssins nous fait connaitre qu'ils sont une colonie d'Arabes." Lacroze‡ and Reland,§ his followers in the same scientific field, pursued their studies animated by a like spirit and reached similar conclusions.

However, it was not until the reign of Catherine II. of Russia that Comparative Philology began to assume a separate and concrete form. That monarch drew out a list of one hundred Russian words and had them translated in as many languages as possible. She soon discovered unexpected affinities, and with her own hand drew up comparative tables. About the same time, Dom Pezron, a learned Benedictine, showed by numerous examples that many words of the Greek language have a Celtic origin. "Vous serez surpris," he wrote to a friend," "quand je vous dirai que j'ai environ sept ou huit cents mots

* Navigationi e Viaggi raccolti già M. Gio. Bat. Ramusio, Ven. 1563.
† G. Leibuitii opera omnia, edit. Dut. Vol. VI., Part II., p. 227.
‡ Commerc. Epistol. tom III., p. 79, Leips. 1742.
§ *Ubi suprà*, p. 78.

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Grecs, je dis de simples racines, qui sont tirés de la langue des Celtes, avec presque tous les nombres. Par example, les Celtes disent *dec*, dix, et les Grecs δέκα. Les Celtes disent *pemp*, cinq, et les anciens Grecs Eoliens πεμπέ. Les Celtes disent *pedwar* ou *petoar*, quatre, et les Eoliens πέτορές. Les Celtes disent *undec*, ouze ; *ddoudec*, douze, etc. Les Grecs, εδνέκα, δοδέκα, etc. Jugez du reste par cet échantillon."* Another pioneer in the Comparative-philological field, Col. Vans Kennedy, wrote a work wherein he quotes nine hundred words common to Sanskrit and other idioms. Lastly, in the early years of this century, the German Francis Bopp, in his *Das Conjugationssystem*, instituted a comparison between the grammatical systems of Sanskrit, Greek, Latin, Persian and German which won for him the title of founder of Comparative Philology.

The paramount importance of such studies is evident, inasmuch as even those scholars who deny the common origin of the human race allow that identity or similarity of language between nations however distant cannot be the result of mere chance, but proves some real connection of origin or early relationship. Nor have believers in the original unity of mankind ever failed to perceive it. "It is then," says Abel Rémusat, "we should be able to pronounce with decision what, according to the language of a people, was its origin, what the nations with which it has stood in relations, what the character of those relations was to the stock it belongs to."†

These researches which brought forth such valuable ethnological and archæological results in connection with peoples, as the European and most of the Asiatic nations, whose historical data are embodied in well authenticated records, cannot fail to prove at least as useful relatively to such races as the American tribes which have no other history than a few vague and disconnected legends and traditions. Nay, it might almost be said that Comparative Philology is in their case the only beacon which can throw any light upon their origin, their migrations and their connection with the other branches of the human family. Unless, of course, we choose to believe in their autochthony and thereby reject the only authority upon which we can depend as upon an unerring guide, I mean the inspired Books. For, as there is on our planet but one species of man, and as the Bible furnishes us with only one Genesis, it follows that, unless we regard the American continent as the cradle of the human race—which I think nobody is prepared to do—we must look to the old world for the birth place of our Aborigines.

*Encyclopedie ou Dictionnaire universel raisonné, art. Celtes.

†Recherches sur les Langues Tartares, Vol. I., p. XXIX.

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And let nobody say that, because the American facies and physique in general are somewhat different from those of the nations of Europe and Asia, we must conclude to a diversity of origin as well as of race. Have we not in our own Indo-European family types more dissimilar than those which characterize the American and some Asiatic races? Surely nobody will deny that a North American Aborigine is physically more alike to a Samoyed or a Mongolian than the inhabitants of the Indian peninsula resemble either a German or a Greek*. Even in such ethnological subdivisions as the Celtic and the Italic, we find notable differences of type and complexion. Yet nobody ever dreamt of considering, for instance, the Irish or the Saxons, and the French or the Italians as the products of two distinct creations.

The question then for the Christian ethnographer is: Since we cannot regard the American tribes as autochthonous, in what part of the old world are we to find their parents or relatives? Many have been the answers to that query, and the opinions of Americanists have been so varied and contradictory that the student is fairly puzzled as to whichis the most plausible. Grotius, de Laet, Garcia and others discussed it in their days with more learning than judgment. To Brerewood, Korn, Jefferson, Charlevoix, Buffon and Cuvier, the red skins were nothing else than expatriated Mongolians or Scyths. Foster even designated the Tartar emperor Kublai-Khan as the virtual colonizer of the New World. Mitchell made the North American Indians regular Samoyeds. During the last century and early in this, a number of writers, treating many primitive usages of mankind as particularly Jewish, endeavoured to prove that the Americans were descended from one of the twelve tribes.

But, without disregarding what there might be of truth in any of these conflicting theories, it must be confessed that sociology is of itself utterly unequal to the task of solving such a problem. Comparative Philology, alone of all the kindred sciences, can claim the right and ability to do so. It was thus understood by the judicious Reland who may be regarded as one of the first to collect from travellers specimens of American languages.† Later on, Smith Barton made considerable progress in the attempt to compare words in the American dialects with terms found among the nations of Northern and Eastern Asia. "In 83 languages examined by Barton and Vater, 170 words have been found the roots of which appear to be the same; three-fifths resemble the

* The facial similarities of the Mongolians and some American natives are so striking that I know of persons who mistook in my presence British Columbia Indians for Chinese.

†De linguis Americanis, Traject. 1708.

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Mantchou, the Tongouse, the Mongul and the Samoyed."* I do not speak of more recent and better known Americanists such as Gallatin, Humboldt, Schoolcraft, Gibbs and a host of others—without mentioning those who are still living—whose researches and judicious studies have illustrated American science. All of them concur in the opinion that the most infallible sign of the congenerousness of two Indian tribes is the similarity of their speech.

What Smith Barton did for the Iroquoian, Siouan, Muskogean and other languages may, I think, be repeated in favour of the Athabaskan or Dené idioms. Or indeed it may be that our own efforts will simply be the continuation of what he commenced himself; for I am not aware of the nature of all the dialects he examined. Be it as it may, his move being certainly a step in the right direction, I beg to enrol myself as one of his humble followers. I live in the midst of Indians who belong to an Aboriginal family roaming over thousands of miles in the North West of British America. In that immense expanse of country we find many congenerous tribes which cannot understand each other, and yet from the territory of the Loucheux of Northern Alaska to the plains bordering on the Chilcotin river in Southern British Columbia, words expressive of those primaries of Indian life such as beaver, bear, canoe, and of the objects of simplest import as water, fire, stone, etc., are singularly similar when not altogether identical.

This almost perfect homonymy has ever struck me as a circumstance of the utmost importance to the ethnologist. For if we are to discover in any corner of the globe races connected with our Dénés by direct or parallel descent from a common stock, it seems to me that it must be through the medium of these fixed, immutable and probably very ancient root words. And I dare hope that this assumption will bear the most rigid criticism. For were we to suppose for an instant that, owing to some impossible cataclysm, we are suddenly deprived of the least historical records relating to the civilized nations, how could we, for example, reconstitute the ethnological map of Europe otherwise than with the help of the roots of the languages spoken by its inhabitants? In like manner, had not the roots of the liturgical Coptic tongue been identical with the Egyptian of the Pharaohs of old, the key to those mysterious hieroglyphics which for centuries puzzled generations of savants would still be sought after. The basis for comparison failing, no practical result could have been obtained.

Therefore, instead of presumptuously building up hasty theories before

*Al. von Humboldt, Views of the Cordilleras, Vol. I.

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we have amassed and impartially collated reliable data, as Abel Rémusat accuses some writers of doing,* I take the liberty of laying before the scientific world the following list of roots extracted from the vocabulary of a dozen or more Déné tribes. May I be permitted to respectfully request lovers of philological and ethnological lore to examine them patiently, and most earnestly beg of those who are in a position to do so, to carefully compare them with terms of Asiatic languages, more especially with those of the Turanian stock? Should any Déné words be found to have sufficient phonetic similarity to synonymous terms from heterogeneous tongues to allow of ethnological argument, I would consider it a very great favor if the discoverer of such affinities were pleased to send me† or the Canadian Institute the result of his researches.

I am well aware that terminology is not of itself what entirely constitutes a language. We must reckon also with its grammar and syntax But, in the first place, I have already given an outline of the grammatical aspect of the Déné idioms‡ which my kind co-operators might consult perhaps to advantage. Then we should not lose sight of the following words of a great authority on the subject: "It appears that nothing whatever could be inferred with respect to the relations of two languages from the coincidence of the sense of any single word in both of them, and that the odds would be three to one against the agreement of two words; but if three words appear to be identical, it would be then more than ten to one that they must be derived in both cases from some parent language or introduced in some other manner. Six words would give more than 1,700 chances to one, and eight almost 100,000 chances; so that in these cases the evidence would be little short of absolute certainty."§ Moreover, some instances seem to warrant us in maintaining that under the pressure of peculiar influences a language may undergo such alterations as that its words shall belong to one class and its grammar to another. In other words, though the grammatical structure of the Déné dialects differs from that of other idioms wherewith they are terminologically co-affin, it would not follow that the relations to the latter would be philologically worthless.

This being premised, I shall now proceed to offer a few remarks to facilitate the intelligence of the following vocabulary and bring out into

* "Ici comme ailleurs, on a commencé par batir des systèmes au lieu de se borner à l'observation des faits." Recherches sur les Langues Tartares, Paris, 1820, p. xviii.

† Stuart's Lake Mission, *via* Ashcroft and Quesnelle, British Columbia.

‡ Transactions Canadian Institute Vol. I., Part II., 1891, p. 170.

§ Alex. von Humboldt, ap. Klaproth, Asia polyglotta, p. vi.

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greater relief the similarity or even identity of the root words which compose it.

1. One great principle of the Dené phonetics which should never be lost sight of is that in those dialects, as in the ancient Semitic tongues, the vowels are transmutable, and therefore, except in a very few cases, no importance whatever should be attached to them. To still better illustrate this peculiarity, I have gone to the trouble of writing down after each separate set of synonyms the real root (marked RR.) which lies at the bottom of each of them. Had I crowded said lists with all the roots which I had at my disposal, the evidence of this principle would have been still more apparent. Initial consonants, that is those which begin *any* syllable, contain the quintessence of the word, sometimes in common with the final consonant which, however, may be said to have but a relative importance.

2. Of the radical consonants, some are interchangeable in any single dialect through the whole linguistic stock to such an extent that they are not differentiated by the natives of any tribe. To this class belong B and P, T and D, K and G, T[and K[or 'K[. A Dené ear perceives no difference whatever between, for instance *pés* and *bés*, "knife;" *ta* and *da*, "lip;" *ku* and *gu*, "worm;" *t'la* and *k'la*, "bottom." Such is not the case with transmutable consonants of the second class. These are invariable within the vocabulary of the dialect which they characterize, but change from tribe to tribe. Pronounce, for example in the presence of a Carrier Indian the word *Na-'kra-ztli-'ten* and he will at once understand you as saying in his own idiom, "people of Na'kraztli" or Stuart's Lake. Change it now into *Na-'kra-ztli-'qîn*. He will still understand you, but will remark that you now speak in a different dialect and if he is at all acquainted with the idiom of the Sikanais, he will recognize that word as belonging to it. Radical consonants of this class are *'t* which is convertible into *'q ; t's*, into *'kw* and *'q ; ts* into *kw*, *kfw* and *tc*. In a few cases, initial *n* is also convertible into *y*, and small bands of Rocky Mountain Dénés as well as the large tribe of the Loucheux or Ku-tchin* likewise change the original *p* common to all the dialects into a regular *v* which is proper to themselves. Therefore the phonetic difference between such words as *ətsi*, *ekfwi* and *itci* is more apparent than real. They are all the monosyllable *tsi* modified by the phonology of the Hare and a few other tribes into *kfwi*, while the Loucheux change the *ts* into its co-relative *tc* and say *itci*.

3. As for the initial vowels *ə*, *e*, *i*, to which we should add the prefixes

*Pronounce, *kut-'qin*.

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hwo, *ko*, *kwo*, etc., they are meaningless accretions which, strictly speaking, are not component parts of the words and which should be treated as if they did not exist. They are proper to a few nouns expressing objects of simple import among which we must count the names of the different parts of an animal body. When the words refer to a human being their prefixes are changed into *ne*, *ni*; *ti*, *tîn*, *téy*, etc., according to the dialects, and they disappear altogether when said nouns are preceded by another word forming therewith compound nouns, as *'kre-'tan*, "birch-leaf," instead of *'kre-ətan*.

4. Of non-initial consonants, *z* is sometimes converted into *w* and *v*, while the first *t* in quite a number of monosyllables is changed into *r*. *Apropos* of *z*, I should remark here that in such works as *et'quze*, "vein," *e'tuze*, "skin," etc., that letter should not be considered as initial relatively to the last syllable of the word, the final *e* being a mere accretion characteristic of certain dialects. The real words are *'quz* and *'tuz*. Thus pronounced they will be understood by most of the tribes.

5. As for the value of the letters with reference to the sense of the words, a close examination of the following vocabulary will disclose the fact that, in all the dialects, connection with water is expressed by an initial *th*: *thu*, water; *thiz*, bottom of the water; *tha-tsi*, wave, etc. Besides, a *t* suffixed to certain nouns or pronouns adds to their original meaning that of reference to place.* For instance, in Carrier, *thu* means "in the water," when we suffix a *t* thereto (*thut*); *e*, "it" becomes "at it," that is, "there" with the same addition. *Ayu*, "another (thing)" Tcilkohtin, signifies "at another place," i. e., "elsewhere" when changed into *əyut*. *s* and *z* in a similar position denote derivation *from* the place expressed by the word to which they are suffixed. Ex.: *nto*, "above"; *ntəs*, "from above"; *nu*, "*in* the direction of the head of the water"; *nuz*, "*from* the same direction," etc. For more detailed remarks concerning the value of letters in Dené, I take the liberty to refer the reader to my paper on "The Dené Languages."

6. The main, and generally only, root of the verbs contained in the following vocabulary, is to be found in their last syllable which, in a number of cases, is subject to radical variations. This applies also to the adjectives which, with barely two or three exceptions, are regular verbs. I give the verbs in the first person singular of the indicative present—there is no infinitive—and the adjectives in the third person of the same mode tense and number.

* A final *h* performs the same function in relation with some nouns. Ex.: *ta-thi*, "doorway"; *ta-thih*, "in the doorway."

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7. The capital letters within parentheses denote the particular tribe to which the preceding root belongs. Here is a list of all the tribes quoted in the vocabulary together with their habitat :—

ABBREV.	TRIBE.	HABITAT.
A.L.	Alaskan Loucheux	Alaska.
B.	Beavers	Peace River east side of the Rockies.
Bab.	Babines	Babine Lake & "Rocher Déboulé," B.C.
B.L.	Bastard Loucheux	Northern McKenzie District.
C.	Carriers	Stuart's Lake, North and South, B.C.
Ch.	Chiłkhoh'tins	Chilcotin River, B.C.
D.R.	Dog Ribs	Between Gt. Slave & Gt. Bear Lakes.
H.	Hares	McKenzie, Anderson, McFarlane Rivs.
L.	Loucheux or Kut-chins	MacKenzie River, 67° and northwards.
L.C.	Lower Carriers	South of Stuart's Lake, B.C.
M.	Montagnais or Chipewayans	Lake Athabaska, etc.
N.	Navajos	Arizona and New Mexico, U.S.A.
Na.	Nah'anés	Stickeen River and east.
R.M.	Rocky Mountain "Montagnards"	Rocky Mountains, about 60° N.
S.	Sékanais	R. Mountains from 54° to 57° W. and E.
V.L.	Variety of Loucheux	MacKenzie River and Alaska.
Y.K.	Yellow Knives	North East of Gt. Slave Lake.

Various other less important tribes are also represented without credit through several words of the vocabulary. My principal aim in introducing the above initial capitals in the vocabulary is, in most cases, to point out the wonderful homophony which reigns between dialects of tribes separated sometimes by thousands of miles.

8. All the words proper to the Eastern dialects are extracted from Petitot's *Dictionnaire de la Langue Déné-Dindjié.** For the sake of uniformity I have taken the liberty to re-spell them according to the requirements of my own orthography. For most of the Navajo terms I am under obligation to Dr. W. Matthews' "Mountain Chant," published in a late volume emanating from the Smithsonian Institution.† Shall I confess in this connection that the irregularity of some radical and, in *all* the other dialects, unchangeable consonants entering into the composition of those words would lead me to suspect that such delicate, but very important, sounds as t's, 'k, ł, may possibly have escaped the notice of the compiler? Those and many other terms in the said Mountain Chant are, in other respects, so similar to synonyms from the Northern Déné dialects as to hardly leave me any other way of explaining away the discrepancies between, for instance, the Navajo roots Nos. 3, 76, 84, 185 and 327 and their equivalents in the other dialects. If I

*Paris, Ernest Leroux Editeur, 1876.

†Vth Annual Report of the Bureau of Ethnology, p. 379.

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am mistaken in my assumption, these alterations of essential consonant sounds afford the comparative philologist data well worth some moments of study.

9. As for the phonetic value of letters, it is as follows:—The vowels are pronounced as in Italian except *ə*, which is equivalent to the *e* in the French words *je, te, le, me; é* corresponds to the vowel in the French "mets;" *è* to the *e* of English "ten." Phonetic accents (*â, ê, ô, û*) as in French. The consonants have generally the English sound except the following:—*g* is always hard; *j* is sounded as in French; ɔ, ɹ are very guttural; *ɻ* is a peculiarly sibilant l; *ñ* is nasal, but its sound is usually ollowed by that of a common *n*.* *Q* almost corresponds to *ty*, both etters being consonant and simultaneously pronounced. *R* is the result of uvular vibrations and in such compounds as *kr, ɣr, 'kr*, it is hardly audible. *Th, kh*, are equivalent to *T plus h* and *k plus h*. The apostrophe before certain consonants represents the Indian exploding sound. *C* is the English *sh*: *tc* is the English *ch* in church. There are two principal dipthongs: *au* and *ai*, pronounced respectively as the *ow* of "how" and the *i* of "mire."

10. Initial or terminal *ɻ* is changed into *l* or *'ll* when the word is in the possessive case, and initial *ɹ* likewise becomes *r* in the possessive.

II.—VOCABULARY.

1 **Man** (homo) ..... Déné, dinè, danè, dunè, denu, təne (C), təni (Ch), tana (N), dunyé (Esp.); dindjyé (L.) tey in compos.=RR.: d-n-, t-n-

2 **Man** (vir)..... dènè-yu (M.), dènè-ju (S.), dènè-yi (B.); dene-liñè (H.): dindjyé-yu and Tikrèñ (L.); təyosz (Ch.)=RR.: y-, j-; tiñ-

3 **Woman** ..... T'sè-khè, t'sè-khu, t'sè-kwi (M.), t'sé-ndjô (L.); t'sè-liñè (H.); t'sô (A.L. and S.); Tci-ké? (N.); ekhué (R.M.) =RR.: t's-k-

4 **Child** ..... ʒskhe (L.C.) 'eskhèɹ (Bab.), eskha (B.), êkhé (H.), ekyé (D.R.): t'sûtən (C.), t'siñto, t'sidoñé (B.); t'siya and t'siñén (L.); a-cike (N.)=RR.: -skh-; t's-t-n

5 **Young man** (juvenis) ..... Tciɻ plur. Tcilkhe (C.), tcéɻ plur. tcélekhe (Ch.), tcilekwi (M.) tsilké (N.) tstcia (L.)=RR.: tc-lk.

6 **Girl** (puella) ..... 'Têt plur. 'têdəkhô (C.), 'tyede (A.L.) 'téré (D.R.), e't'te (B.), e't'tedu (S.), e't'tede-kwi (M.), e't'tede-khe; t'se-liñ (S.)=RR.: 't-t

7 **Father** ..... ʒtha, thyéñ (L.), theni (V.L.); əpa (C.), əpép (I'ab.)=RR.: -th-; -p-

8 **Mother** ..... ʒɹañ, əɹoñ; emañ, emoñ; enañ (R.M.(. əpan (Ch.); 'ellu. (C.)=RR.: - -ñ; .p-n; -llu.

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*In Tciɻkhoh'tin, *ñ* is the equivalent of the French nasal *n* in such words as *entends, sein, son*

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9 **Son** (said by mother) .....ʒyaz, eyaze, yaji (N.), eja (S.), eyañ (H.), ezaze (D.R.); ikhi (L.); = RR. -ya-

10 **Son** (said by father).....əyé, eyésse, ezile (Y.K.); etcune (H.); izjyow (L.) = RR.: -y-; -ch-n-

11 **Daughter** (said by mother) ..əya-t'sé (*i.e.* "little one—feminine) (C.), et'sôa (Na.), yet'si (L.), et'sale (V.L.); ethue (H.), ithiñ (L.); əɬan (A.L.); = RR.: y-t's-; -t's-; -th-

12 **Daughter** (said by father) ..ətsé, tzoe = RR.:-ts.or-tz.

13 **Grandfather**.....ətsiyan, etsiyé, etséé, itsi (L.); asse (B.) = RR.: -ts-y-

14 **Grandmother** .....ətsu, etsun, etsune, etsuneta (B.); assun, esson (L.) = RR.: -tsu-; -ssun

15 **Grandchild** .....ətcai, etcéy (L.), etca-aze (M.), etcaze (B.); ekfwie (H.), ekfuë (B.L,) = RR.: -tca-; -kfw-

16 **Brother** (elder) .....ûnâ (C.), nai (N.), unare (M.), oñre (Bab), uñdarè (S.); gûntye (H.), iyondè (L.)=RR.: un-; yunt-

17 **Brother** (younger)..... ətcəl, ətcél, etcéle, etcile; tsili (N.)=R.R.: tc-l-

18 **Sister** (elder) .....are, tare, etare: əyat, edji (L.); enba (S.) = RR.: -are.

19 **Sister** (younger)..... ... ətiz (Ch.), edéze (M.), etyéze, etieé, edjyéz (L.), ətis (C.) = RR.: -t-z-

20 **Uncle** (maternal) .....əz·é, e·è, e·éñ, o·i (L.), er·é = RR.: -·-

21 **Uncle** (paternal).....əthai, ethi (L.), ethiyi (L.), estha (S.) = RR.: -th-

PARTS OF THE BODY.*

22 **Head** *.....ətsi, ekfwi, itci (L.) = RR.: -tsi and co-transmutables.

23 **Hair** (fr. "poils").....əra, era, əre. = RR.: -r-

24 **Hair** (fr. cheveux) .....ətsi-ra, ekfwi-ra, etci-re=RR.: the above two combined.

25 **Face**.....iñne, iñni, iñen; ñan (A.L.), nîn (C. and Ch.). = RR.: ñ-n

26 **Mouth**.....əzé, eza, ca (M.), ſwa (H.), ewa, ſa (R.M.), zat (A.L.), cet (L.) = RR.: -g- and commutables.

27 **Teeth** .....əru, ərwo.=RR.: -ru and rô

28 **Lips**.....əta, eda'nne (M. and H.), ite-va (L.), ite-va-die (L.)=RR.: -t-

29 **Tongue**.....etsu (M.), ətsol (Ch.), ətsulla (C.), etsuri (B.), itca (L.)= RR.: -ts-

30 **Eyes**.....əna, ine (L. in compos.), enare (M.); eta (S.), woda, enda, ənde (L.)=RR.: n-; t-, -t-

31 **Ears**.....ətzo (C.), edzi (L.), edzie (H.), edzare (M.), wodzare (S.) = RR.: -dz-

32 **Drum of Ears** .....ətzé (C.), edzi (H.), idzi (L.), edzie (M),=RR. -dz-

33 **Neck**..... .....e'kroc, ə'kwəc (Ch.), e'ko.=RR.: -'k-

34 **Arms**.....ekone, ekîn, ekun, əkran (C.), əkan (A.L.)=RR.: -k-n

35 **Elbows**.....etsé, etso, etséz, etsuze.=RR.: -ts-z

36 **Hands**..... ...lla, əlla, iñlla, ənlle (L.)=RR.: -ll-

37 **Fingers** ... .əlla-t'sən, iñlla-'kwene, iñlla-t'sale. = RR.: hands-bones

38 **Finger-nails**.....əkre (C.), əkai (L.), əkrən (Ch.), ekrane (M.), ekone (H.) = RR.: -kr-or-k-. Follows always the word "hands": əlla-kre

39 **Legs**.....edzare, idzjiedi (L.); ət'sən, et'séne, e'kwene. = RR.: -dz-; -t's- and commutables. ʒt'sən and following words mean "bone." The Carriers say khé-tcən, "feet-stick," or "-handle."

*See Remark 3, Introduction.

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40 **Knees** .....əkwət (C.), əkwot (L.), əkot (A.L.), eko (H.), ekor (M. and Y.K.)=RR.: -k-t

41 **Feet** .....əkhe, əkré=RR.: -khé. The accent is here, by exception, necessary to differentiate that word from the term used by some tribes to say "husband."

42 **Sole** .....khé-t'la, khé-'kla, kré-'klén (L.)=RR.: "Feet-bottom."

43 **Breasts** .....ət'sû, et'sə ; 'tagu (L.)=RR. -t'sû or t'sô ; 't-

44 **Milk** .....t'sû, t'sûe, tsû-ge (B.), e'tə-thu ("breasts-water," H.) RR.: same as above.

45 **Belly and Womb** .....etcañ, ətcan, etcoñ, etstciet (L.)=RR.: -tc-n

46 **Abdomen** .....əpət, ebət, ebər, epə (H.), enbə (S), evət (L.)=RR.: -p-t

47 **Heart** .....ətzí, edzjî, edzéé, edziye ; kidzjan (A.L.)=RR.: -dz-

48 **Kidneys** .....etse, etseze, etsəgə (L.); ene-tcai (R.M.)=RR.: -ts.

49 **Liver** .....əzət, azət (L.), ezər (M.); ewət (H.), kowo (D.R.)=RR.: -z-t

50 **Lungs** .....ətəs, ətis, ətize, etewé, ətoyo (L.) ; efuñ (R.M.)=RR.: -t- -

51 **Entrails** .....et'siye, et'sîg.=RR.: -t's.

52 **Back** .....ənèn (Ch.), ennene (M.), iñnene (H.), ənnan (L.) ; e'taziñ, e'ta-ne, ən'tien ; əyən (C.)=RR.: -n-n : -'t-

53 **"Tergum"** .....ət'la, e'kla, e'klé=RR.: -t'l-

INTERNAL PARTS OF THE BODY AND ACCIDENTS THERETO.

54 **Corpse** .....əzi (C.), ezie (M.), ejigə (L.), əzik (L.C.) ; ewie (H.) ; etciñe (L.)=R.R.: -zi and commutables, the "i" being always retained.

55 **Flesh, Meat** .....t'sén, t'séñ, kfwéñ (H.), ətsəñg (C.), ətsi (Bab.)=RR.: ts-n

56 **Bone** .....t'sén, e'kwéne (H.), t'sən (C. and L.)=RR.: t's-n

57 **Fat** (solid) .....ə'krâ, e'kra, e'kré.=RR.: -'kr-

58 **Fat** .....ɹe (C.), ɹéi (L.), ere ; k'lés, 'klé.=RR.: ɹe ; 'kl-

59 **Blood** .....tél, ta (L.) eté, etéle.=RR.: t-l. The Carriers say əzkhrai

60 **Vein** .....ət'qûz, et'qûze (M.), et'quwe (H.), et'qoñ (L.)=RR. -'q.-

61 **Muscle** .....t'sé, 'kwé, 'qé, et'ségе.=RR. t'sé and commutable consonants.

62 **Skin** .....ezəz, ewé, evə, ezow (L.) evé (S.)=RR. -z- and commut.

63 **Skin** (fine, as of fruits, etc.) ..'tuz, 'tus, 'tu, 'tis, e'tuze.=RR.: 'tu and a sibilant.

64 **Excrement** .....tsañ, tseñ, tsoñ, tsyeñ)L.)=RR.: ts-ñ

65 **Urine** .....ɭéz, ɭé, ɭəz (C.), ɭazj (L.)=RR. ɭ-z.

66 **Pus** .....ɹəz (C.), ɹaw (L.), ɹéz, ɹewi (H.)=RR.: ɹ-z. Possess rəz, etc.

67 **Boil** .....t'sés, t'səs, t'sé, t'sə.=RR.: t's-s

68 **Scar, cicatrice** .....ɹaz, ɹazi ; ɻa (C.)=RR.: ɹ-z and ɻ-. Possess., raz, etc.

69 **Scab** .....ɭut, ɭur (M), kolled (H.), elludé ; néyview (L.)=RR. ɭ-t.

THE EARTH AND CONCOMITANTS.

70 **Earth** .....nni, nne, nna, nnu, nən (L.), nèn (Ch.), nan ; yən (C.)=RR.. nn- or -nn

71 **Earth** (dust, etc.) .....ɭéz, ɭiz, ɭie, ɭe.=RR.: ɭz.

72 **Country** (pays) .....néne, nan, ɹən ; dye ; khé-yər (C.), kri-yé (M.)=RR.: n-n, etc.

73 **Land** .....sai, séi, cai, ca, ʃwa, ʃa (R.M.)=RR.: s-

74 **Stone** .....tsé, tci, tco (L.), kfwé, fwé.=RR.: ts-

75 **Mountain** (wooded) .....céc, cəs, cyé, ci, ciw.=RR.: c-

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76 **Mountain** (steep and rocky)..tzəɭ (C.), dsil (N.)=RR.: tz-ɭ.
77 **Summit** .....ta, tig, tare ; la, lla, llé, lleñi.=RR.: t-; ll-
78 **Grass** (hay).....t'lo, 'klo, 'klôr,.=RR.: t'lo
79 **Prairie** .....t'lo-'kət, 'klo-'ké, 'klô-dye, 'klow-tizjə (L.), 'klo-néné (M.)= RR.: "grass-on" and "grass-country."
80 **Road**.. .....thi (C.), théñ (Ch.), thaeñ (L.), thuñ-lu (M.), tiñ-lu (Y.K.); ghé (H.),=RR. th-
81 **End** .....la, lla, llé, lañ, lloñi, luñ (B.)=RR.: Same as "Hands," 36.
82 **Middle** .....niz, nize, nie ; nitig (L.)=RR.: ni-
83 **Edge** .....pa (C.), pè (Bab.), pañne (Y.K.), bañne (M.), véñ (L.); e'ka (H.); winañ ; meñ (D.R.)=R. p-, -k-

LAND ANIMALS.

84 **Dog** .....ɭi, ɭin, ɭiñ, t'leñ kli? (N.); possess. s. lək, sə llik, se lline -ɭin, etc.=RR.: ɭi. These words are used in connection with all domestic animals.
85 **Wolf** .....yés, yəs, zjow (L) ; nûn (Ch.), nunniye ; tika (R.M.), tikai (H.)=RR.: y-s, nûn ; tik-
86 **Lynx** .....noñta, nûntî (Ch.), nidzjin (L.); tcize (M.), tcere (B.L.)= RR.: n-nt-; tc-z.
87 **Bear** (black) .....sas, cac (N.), s'əs, sa, sié.=RR.: s-s
88 **Caribou** .....hwotzih (C.), pətzih (Ch.), medzi (S.), mindzi (R.M.); thañ- dzjye (M.)=RR.; -tzi
89 **Moose**..... .....dəni, denié, denii, tendi, dendjig (L.), tenni (R.M.)=RR.: d-n-
90 **Beaver** .....tsa, tsé, tsi, tso, tsu.=RR.: ts-
91 **Rabbit** .. ..gha, gho, kha, kho, khé, khəɹ.=RR.: kh-
92 **Porcupine** .....t'si (M.), t'sit (L.); 'quñe (H.), 'qâh (Ch.), tet'que (B.)=R R.: t'si ; 'q-
93 **Squirrel** (sciurus Alpinus)...g'lie, k'lie, k'lik, k'lag, k'le, k'loye.=RR. k'l-
94 **Mouse**.....tlûn, tlune, gluñé, klu, klo (L.)=RR.: tlu-
95 **Worm**.....gu, ku, kyoñ (L.), əsku (C.)=RR.: ku

WATER AND CONCOMITANTS.

96 **Water**.....thû, thô (Ch. and N.), thyoñ (L.); in compos. tha, thé=RR. th-
97 **Water** (bottom of).....thèɹ, thère, thèe, thè=RR.: thè
98 **Water** (surface of).....tha-ɻra, thi-ɻra (D.R.), thu-ɻrare ; tha-taë=RR.: ɻra-, "surface.")
99 **Current** .....niliñ, nileñ, nilini (N.), nînli (C.)=RR.: ni-l- These words are as many verbs meaning "it flows."
100 **Cascade** .....nainliñ, nainli, na-deinlin (H), na-deñleñ (L.)=RR. na-nli. These words are also verbs meaning "it falls down while flowing."
101 **Foam**..... .....əɹwos, oɹwos, koɹo (H. and L.)=RR.: -ɹ-o
102 **Eddy** .....o (C.), o·e (D.R.), orneé (M.), oghe (H.), ogho (L.)=RR.: o
103 **Wave** .....tha-tsi "water head" (C.) ; tha-dethiñe (M.), tha-detco (H.), thie-ditcig (L.)=RR.: tha-
104 **Shore** .....tha-pa, tha-bañne, tha-pañre, tha-ma (B.L.), the-veñ (L.)= RR.: "Water-Edge."
105 **Beach**..... .....ɭan, tlañ, 'klane, kllen (L.)=RR.: l-n

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106 **Bay** .....t'ləɹ (C.), 'kla-zeñ (M.), 'kllen (L.)=RR.: t'l-, root of the words for No. 53.
107 **End of Lake**.....Tha-t'la, thé́y-t'let, tha-t'let=RR.: "Water-bottom."
108 **Island**.....nu, nnu, ndu, ndju and ndow (L.); tu.=RR.: nu.
109 **Ice** (on water).....thèn, thən (C. and A.L.), than (L.), thène (B)=RR.: th-n
110 **Ice** (floating or in pieces) ....ɻu, ɻut ɻəm (C.); kwollu (Ch.), kollu (D.R.)=RR.: ɻ-; -ollu

WATER ANIMALS (FISHES).

111 **Fish**.....ɻue, ɻuge ɻugu, ɻoh (C.), ɻuk (L.C.)=RR.: ɻu-
112 **White fish**.....ɻu, ɻo, ɻuge-wa (H.), ɻugu.=RR.: ɻu
113 **Salmon** .....tha-llo, tha-llok.=RR.: "Water-fish."
114 **Eggs and Fry** .....ə'kûn (C.), e'kin (L.), e'kûne, e'krune.=RR.: 'kûn
115 **Fish bone**.....ərai (C.), era (H.), erwosse (M.)=RR.: -r-

SKY, CONCOMITANTS AND DERIVATIVES.

116 **Sky** ....ya, jya (S.), jà, zjyé (L.); in compos. yé, yi, yu=RR.: y-*
117 **Sky** (without clouds).....ya-zañ, ya-zoñ, jya-zañ, ya-zai, zjyé-zjin.=RR.: "sky-bare."
118 **Clouds**.....'kwos, 'kwəs, 'kwroc, 'kro=RR.: 'k-
119 **Sun** .....sa, sye (L.)=RR.: s-
120 **Moon** .....Same as above, and eldzî, îldzîn (L.C.), 'adzi (S.), adzie (H.), adzji.=RR.: -dzi. Many tribes say also "night-its-sun."
121 **Star**..... .....sən (Ch. and L.) sèn, cèn (M.), fwèñ (H.), fèñ (R.M.), səm (C.)=RR.: s-n
122 **Rain**..... .....tcan, tcoñ, tcyèn (L.)=RR.: tc-n
123 **Snow** .....yəs, yac (M.) jyah (H.), jah (S), zjyow (L.)=RR.: y- -
124 **Snow** (crusted by winds in the t'siɻ, t'si=RR.: t'si-. When it is hardened by the cold of spring.)..... the nights, not by the wind, it is said
125 **Snow** (hardened.) .....ollu, kollu, kullu.=RR.: -llu
126 **"Gresil"** "frimas."....so, sor, kôzo, kozjo.=RR.: sibilant-
127 **Hail**.....iñllu, iñllue, enllu, anllu, kiñllu (A.L.)=RR.: -nllu
128 **Fog** ....'a, 'ha, 'hèg; tséɻ, tsə.=RR.: '-: ts-
129 **Wind** .....nîɻt'si, nîñt'si, at'sey (L.)=RR.: -t'si

BIRDS AND CO-RELATIVES.

130 **Bird**..... .....de't'tañi, de'toñi, tə'tañ (old C.), tə'tai (modern C.), RR.: t-'t- from 'ta, "feather;" means "the feathered ones."
131 **Feather** .....'ta, 'té (L.)=RR.: 't-
132 **Feather Down**. .....tciwc, tciéc, tcéz, tcus, tcow; t'səz (C.)=RR.: tc and a sibilant; t's-z
133 **Wings**.. .....et'séne (M.), int'séne, -a -t'sən (L.), 'ta- t'sən (C.)=RR.: -t's-n
134 **Tail** ....etcé, ətcé, etstci (L.), tsé (N.)=RR. -tcé. The é being characteristic.
135 **Egg** .....ɹez, əɹez, əreze, arwo (L.)=RR.: ɹ-z
136 **Nest** .....'to, 'tô, 'tôr=RR. 'to. "Bill" is said as "Lip."

SPECIES OF BIRDS.

137 **Raven**.....'ta-tsañ, 'ta-tsoñ, 'té-tsieñ=RR. "Feathers-dung."

* Same word in all the dialects for "louse," the intonation determining the sense.

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138 **Crow** (small) .....'ta-tsañ-tsəl, ta-tsan-tséle, etc. Same words as above with the diminutives tsèl, tsəl, tséle
139 **Wild Goose** (A. Canadensis.)ɹa, ɹé, réy, ɹəɹ, =RR.: ɹ-
140 **Gull** (L. eburneus).....pîs-'krai, pes-'kraye, pə-'kra (H.), və-'ké (L.), RR.: p- 'kr.
141 **Crane** ....te[, ti[, tiele, tele ; djya (L.)=RR. t-[; the final e in tiele ; tele is instrumental in changing the radical [into l.
142 **Loon** (C. articus) .....tha-tzî, tha-dzéne, tha-dzjeñ (L.)
143 **Fly** (common).....t'suz, t'soz, t'sô, əst'səz (C.) ; taïn (L.)=RR.: t's-z
144 **Mosquitoe**.....t'seh, t'sih, 'qi (L.), 'kwi (H.), det'qule (Y.K.)=RR.: t's- and commutables

FIRE AND CONCOMITANTS.

145 **Fire** .....kron, krun (B.), krwon (C. and L.)=RR.: kr-n
146 **Smoke**.....[ér, [at (L.). [ət (A.L. and C.), [e. =RR.: [-t
147 **Coals**.....'tés, 'tie (H.), 'te (R.M.), 'to (L.)=RR.: 't-
Ashes ....is translated by "Dust" in all the dialects.
148 **Fire-wood**.....tséz, tsəz, tsé (H.), tsow (L.)=RR., ts-z

WOOD AND CONCOMITANTS.

149 **Wood** ....de-tcèn, tə-tcən, tciñ (H.), tcran and tə-tcran (L.)=RR.: tc-n. "Də" and "de" is strictly speaking no real root. These particles simply refer to the length of the stick.
150 **Bark** .....'tuz, etc. as "skin."—of spruce to cover houses, etc., əlla
151 **Branch**.....'kwé (H.), cow (L.) Is more generally rendered by the two following
152 **Leaf**.....e'tan, a't'tañ, iñ'tañ, iñ'toñ. =RR.: 't-n
153 **Leaf** (of coniferous) .....'əl, 'el ; 'el-kare, tila-kare (H.), tila-ko (D.R.)=RR.: '-l
154 **Thorn** ..... ɹwəs, ɹwos, ɹo, ko-ɹo. =RR.: ɹ-
155 **Root**.....rai, ray, re, əreh=RR.: re
156 **Gum**..... ...dzé, dzéh. =RR.: dzé
157 **Fruit**.....djiyé, djie, djèg ; mai (C.), nez'tan (Ch.)=RR.: dj-
158 **Bush** .....t'sel, t'səl, t'sele ; ko-t'sele (H.), ko-t'səl (L.)=RR.: t's-l

TREES.

159 **Spruce** (A. alba) .....t'sû, t'si (R.M.), t'səvi (L.)=RR.: t's-
160 **Birch** ....'kri, 'kre, 'kek (A.L.)=RR.: 'kr-
161 **Willow**.....'krai, 'kraye (H.)=RR.: as above.
162 Fr. Can. "**Liard**"..... 'taze (M.), 'tewi (H.), 'taw (L.), 'tesh (A.L.)='t-z
164 **Service berry** .. ..'krin-djiyé, 'ki-djeg (L.), 'kren-mai (C.)=RR.: 'kr-n
165 **Service berry-tree** .....'krin-tcène, 'ki-tcran (L.), 'kren-tcən (C.)=RR.: preceding with "stick."
166 **Raspberry**.....da-krale, tañ-kral, ta-krare (D.R.)=RR.: t-kra-

HABITATIONS.

167 **House** .....yé, zjé, yi, yəɹ ; khoñ, khuñe, khuni=RR.: y-: kh-ñ
168 **Den** ....'an, 'on, 'añr, 'añre, 'oñi. =RR.: '-n
169 **Lodge** (beaver) .....ekhin, ekrin, əkren (C. and L.)=RR.: -k-n
170 **Dam** (beaver) .....'e[, 'ə[, 'eh ; t'sia (L.)=RR.: '-[

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WEARING APPAREL.

171 **Head-gear** .....t'səɪ (C.), t'sé (L.), t'sor (A.L.), t'sa-krale (M.)=RR.: t's-
172 **Blanket** .....t'sère, t'séde (L.), t'səte (A.L.), t'səɬ (C.); naɭ'ti (L.C.)=RR.: t's-t
173 **Belt** .....sé, cé, ſwé (H.), cəw (L.), cəz (M,)=RR.: sibilant-
174 **Coat** .....·i, ·ie, ·ig.=RR.: ·i
175 **Breech cloth**.....tsan, ſwoñ (H.), ekſwone.=RR.: ts-n
176 **Leggings** .....ceɭ, cəɭ, ſwé (H.), possess. (se) zele (se) wewe (H.)=RR.: sibil.-
177 **Mocassins**.....khé, kré, kie, khé-skwət (C.)=RR.: same as "ſpot," 41.
178 **Mittens** .....djis, tcis (Y.K.), djéèc (L.); pa, pat, pare. RR.: dj-s; p-
179 **Snow-shoes** .....·ai, ·aih, ·a, ·ey.=RR.: ·ai diphthong.

IMPLEMENTS.

180 **Canoe** .....t'si, t'su (H.), t'sé (D.R.); ella (Slave and Sék.)=RR.: t's-; -lla
181 **Paddle**.....'toc: 'tôh, 'to, 'qoc (C.)=RR,: 'to
182 **Knife** .....bés, bié, bé: ɪəzthih (C.); əthés (L.C.)=RR.: b-
183 **Axe**.....tséñɭ, kokfwiñ (H.), tsé-tsiɭ (C.), té ·éñ (L.)=RR.: ts-ɭ
184 **Iron**.....tsañ-tsəne, sa-tsoñne, sa-tsoñ (R.M.); iñtsi (L.); ɪəzthih (C.)=RR.: "beaver-dung" and "bear-dung."
185 **Arrow**.....'kra, 'kroñ. 'kiñ, 'kie (L.), ka (?) (N.)=RR.: 'kr-
186 **Quiver**.....'krañc, 'kras, 'kroñ, 'ki-ja (L.)=RR.: "Arrow," and a sibilant indicating "room for, place of."
187 **War club** .....ɹaɭ, ɹəɭ, ɹa (H. and L.); possess. rale=RR.: ɹ-ɭ. Possess. ral, etc., ɹ and ɭ being changed into r, l.
188 **Snare** .....piɭ, biɭ; mi; via (L.)=RR.: piɭ.
189 **Vessel** (any small deep recipient .....) thеɭ, thiɭ, theli, thiañ (L.) RR.: th-ɭ
190 **Kettle** (anything to put on the fire) ..... oñca, ôsa, uñsa, oñſwa (H.)=RR.: -osa. The C. formerly said: nôsai
191 **Plate** (or any flat vessel) ....t'sai, t'sak (Bab.) 'qék (L.), 'kwa (H.)=RR.: t's-
192 **Rope** .....t'luɭ, t'lule, t'lu (H.), tlla (L.), tloll (A.L.)=RR.: t'lu
193 **Handle** .....tcən, tcéne, tcine, tcran (L.)=RR.: same as that of "Wood."
194 **Handle** (long) .....thî (C.), thîn-tcèn (Ch.), thin-tcine (H.), thaeñ (L.)=RR.: th-
195 **Edge** (of cutting tool) .....'kra, 'ka (S.), 'kyé (L.)=RR.: Same as that of "Arrow" (185).
196 **Fishing Hook** .....qəc (C.), qéc (Y.K.), djyèc (M.)=RR.: q-c-.
197 **Hook** (large) .....səɹ, saɹ, san, so: sə; zaɭ (M.)=RR.: s-
198 **Bow**.....eɭthin, aɭthèn (L.), iñthiñ, əɭthi (modern C.)=RR.: ɭ-th-
199 **Walking stick**.....thəz, théz, thaz, théh (H.)=RR.: th-z

ABSTRACT NOUNS.

200 **Day** (from morn till eve) ....tzîn, dzin, dzjîn (L.), dzîne (M.)=RR.: dzîn
201 **Night**.....thəz, thaz (L.), théze, théwe (H.)=RR.: th-z
202 **Midnight** .....thəz-niz, théze-nize, thaz-itlədé (L.)=RR.: Same as in English, the order being reversed ("night-mid").
203 **Daily** recurrence of obscurity ɹəɭ, ɹiɭ, ɹa, ɹe=RR.: ɹ
204 **Sleep** .....peɭ, pəɭ, beɭ, pə (H.), vah (L.)=RR.: p-ɭ
205 **Mind, thought, cares** ....ni, inni; kojya, kwi-zjye.=RR.: ni; k-jy-
206 **Spirit; double self**.....tsîn, tsîne: eyuñne (M.)=RR.: tsîn

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207 **Smile** .....tlô, klô, dlô, dlor, tloh.=RR.: tlô
208 **Weeping**.....tsâ, tsar, tsé, tsié.=RR.: ts-
209 **Song**.....cèn, cən, ciñ ; possess. sə-yèn, ci-gin (N.); ellik (L.)= RR.: c-n-
210 **Whistling** .....yuyuz (C.), yulyiñz (M.), yuzjyo (L), uyiñ (H.)=RR.: -uy-
211 **Breath**.....əyiz, eyie, eyu.=RR-: -y-
212 **Old age**.....cañ, ciñ, cioñ (H.), sañ, (N.), qañ (C.)=RR.: -an
213 **Famine** .....tan, tañ, dañ, toñ, doñ, tuñ, tai (C.)=RR.: -t-n
214 **Disease, plague** .....tata ; llae (H.), t'sik (L.)=ta ; l- - ; t's-
215 **Cough** .....krwəs, kroc, khro.=RR.: k-
216 **"Essoufflement"**.....cih, ci.=RR.: ci
217 **Shame**.....uya, yuya, ozjyé (L.)=uy-
218 **Name** .....iñzi, ûzi (C.), ûzji (L.), rôzi (Ch.)= -zi
219 **Half**.....'kəz, 'kéz, 'kew (H.)='k-z
220 **Month**.....Is rendered by "sun" and : sa-nən, sa-ni, sa-ne (V.M.), siénan=RR.: "sun-duration" or "moon-duration or season."
221 **Season**.....nén, nən, nan, méñ=RR.: n-n
222 **Winter** .....ɹe, ɹai, ɹey, ɹaye, ɹhare, ɹet.=RR,: ɹ-. All the tribes also say, yac-'ké, yəs-'kət, etc. "Snow-on."
223 **Summer** .....tan, atonle, tañ-grən (C.)=RR.: t-n
224 **Summer** (first or early).....cin (C. and L.), cine (H.), sine (M.)=RR.: c-n
225 **Ursa major** (constellation) ..yeta, yita (D.R.), yéc-ta (M.), yéh-tai (Ch.)=RR.: y-t-. *Ursa minor* is rendered by the same words followed by the diminutives tsél, tsəl : yaz, etc.

ADJECTIVES.*

226 **Good; nice,** etc.....ne-zuñ, ne-ziñ, ne-zoñ (R.M.), ni-zjiñ (L.), n-zu (C.)=RR.: zu
227 **Long** .....el-nez, ne-nez ne-nəz (Ch.), nin-djiw (L.); en-tew*=RR.: -z. The C. say n-yiz.
228 **Short** .....e-tue, iñ-tue, nən-tî (Ch.), n-tuk (C.)=RR.: t-
229 **Heavy**.....ne-taz, nən-taz (Ch.), n-taz (C.), nen-ta (B.L.), ni-tije (L.) =RR.: t-
230 **Light** .....nən-tzai (Ch.), ni-tzik (L.), n-tzak (L.C.), n-tza (C.), ne-zare (M.)=RR.: tz-
231 **Thick** .....des-thi, de-thi, tə-thai, tidi-thiñ.=RR.: th-
232 **Thin**.....t'sə'tan, t'se'taňne, t'se'tale (M.); iñ'toňne, RR.: 'tan from ə'tan "leaf."
233 **Flat** ("épaté") .....de-kraɬ, tə-kraɬ, inde-krale (H.), déy-kaɬ (L.)=RR.: kraɬ
234 **Big, great** ... .ne-tca, iñ-tco (R.M.), eñ-tcai (V.M.), nən-tcâ (Ch.), niñtcyé (L.), n-tcä (C.)=RR.: tc.
235 **Small** .....nən-tsul (Ch.), n-tsul (C.), n-tsol (L.C.), tsula (M.), otséle (M.), iñ-tséle (H.), kwen-tsél (L.)=RR.: ts- and a labial.
236 **Warm** ... .ne-zəl, ne-zéli (M.), ni-zu (L.), fwe-wele (H.)=RR.: z-l and commutables with z.
237 **Cold**.....nîn-'kraz, nî-'kraz, nez-'kraz, we-'kra (H.), zey-'kraz (L.); ellu (M.), we-klu (H.), elluze (H.), eklu (L.)=RR.: 'kraz ; -lu
238 **Wet**.....səl-tsél, ol-tsél, nil-tséli, we-tsél, nal-tsa (L.)=RR.: tsél

*See Introduction, remark 6.

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239 **Moist** ..... nal-zor, te-zo, éll-zjo (L.)=RR.: zo
240 **Red** ..... de-téle (H.), tél-tel (Ch.); di-t'si, di-t'sig (L.); təl-ˀkəu (C.) =RR.: tél, "blood"; t'si, "vermillion"; kron, ·"fire."
241 **Grey** ..... təl-pa, del-paye, kote-pa (H.), tco-péze=RR.: pa
242 **Grey** (hair) ..... dél-kray (M.), təl-krey (C.), de-kay (H.), da-kay (L.), de-krali (S.)=RR.: kray
243 **Yellow** ..... dél-tsor, təl-tso, de-kfwoy (H.), zə-tsow (L.) RR-: tso
244 **Rancid** ..... ez-tsoy, re-tsor (S.), ye-kfrwo (H.), zə-tsow (L.), RR.: tso
245 **Prickly** ..... dé-t'sé, səɬ-t'si (C.), tenîn-t'sa (H.), tinîn-t'sik (L.), səɬ-t'sik (L-C.)=RR.: t'si.
246 **Precious, dear** ..... tiz-thî, der-thî, de-thi.=RR.: thî. Hence təne-thî, mutih-thî, "man-precious," old-man; "chief-precious," big chief. The C. of 100 years ago said thəñ instead of thî.
247 **Muddy** (water) ..... dzañ, dzin, dzoñ.=RR.: dz-n
248 **Numerous** ..... ɬañ, ɬan, ɬoñ, eñtloñ, kiñɬeñ (L.), ɬai (C.), =RR.: ɬ-
249 **Raw** (meat) ..... 'teè, e'te, et'qe.=RR.: 'te
250 **Green** (wood) ..... təllin, dellin, detlin, təlli, atlow (L.)=RR-: -lli. The syllables "tə, de" indicate that the adject. qualifies an elongated object.
251 **Naked** ..... în'tit (Ch-), əs'tet (C.), iñl'teri (M.), iñ'tieri.=RR.: 't-t. These words are genuine non-verbal adjectives.*

VERBS.

252 **To be** ..... esli, əstli, el·i îl·i, nəstli (Ch.), əstləñ (old C.)=RR.: -lı. This verb is used only in connection with nouns and two or three real adjectives.
253 **To be sitting down** ..... səsta, seta, cita, wita, zidie (L.)=RR.: -ta. Plural t'si; dual kré
254 **To be lying down** ..... səsthi, sethi, nesthi, nethi, nitci (L.)=RR.: thi, plural thés. Applies only to living animals.
255 **To be lying down** ..... səɬthi, celthi RR.: same as above. Applies to *lifeless* animals and their empty skins.
256 **To be lying down** ..... One single object with no striking characteristic=RR.: -.ai, ·añ
257 **To be lying down** ..... Several non-particularized objects=RR.: -tla, la
258 **To be lying down** ..... Soft as linen, tanned skins, etc.=RR.: -tcuz
259 **To be lying down** ..... Granulous as sand, salt, etc.=RR.: -tzai
260 **To be lying down** ..... Long as wood, etc.=RR.: -than
261 **To be lying down** ..... Round (but single)=RR.: n-·ai, n-·añ
262 **To be lying down** ..... Liquid=RR.: -tzéh
263 **To be lying down** ..... Coagulated=RR.: -tɬé
264 **To be lying down** ..... In an uncovered recipient=RR.: -kraih, etc., etc., etc.
265 **To be standing up** ..... səcyin, seyin, cîyin.=RR.: -yin
266 **To sing** ..... ésqèn, əsqən, eeqiñ (H.)=RR. -qèn and cèn "song."
267 **To weep** ..... éstsar (M.), etsé (H.), itsé (L.), əssâ 2nd pers. întsâ (C. and Ch.)=RR.: -tsâ
268 **To Laugh** ..... əstloh (C.), na-stlôr (M.), eklo (H.), itla (L.)=RR.: -tlo
269 **To cough** ..... təsɤwəs, deskroc, tekro (H.)=RR.: t-ɤwəs
270 **To say** ..... déssi, désni, tiño (L.)=RR.: d-i

*I omit such adjectives as "fat" "frozen," etc., because the root of their equivalent in Déné is the sam as the words "fat" and "ice" which I have given among the nouns.

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271 **To ask**.....utəskrət (C.), odeɭkrat (L.), uteké (H.), ureskər (M.)=RR.: ut-k-
272 **To think**.....(opinari) yenescèn (M.), yenészən (Ch.), yenîcèn (L.), nəszən (C.)=RR.: n (from "ni" mind) -ɔ-n
273 **To see**.....es·î, e·î, əs·en=RR.: -·î, 1st conj.
274 **To snore**.....əsrô (C.), ésroñ (Ch.), deroñ (H.), esros (M.), éɭrwok (L.) =RR.: -ro
275 **To Burn**.....təs'krən, dés'kran, de'koũ, tîɭ'ki=RR.: -'k-
276 **To kiss**.....ést'sun, et'su, na-d-əst'suz (C.), neɭ-t'sun (L.)=RR.: -t'su
277 **To tear**.....təs'qéɭ, dés'qél ; de'kla (H.)=RR.: -'q-l
278 **To make** (v. tr.).....(construct, fabricate) aslé (M.), aslèɪ (Ch.), əstle (C.), aɭ·e (H.), 'tîl·è (L.)=RR.: -le
279 **To make** (v. tr.).....so and so, to cause a change in an object already existing, éstsi, essi, əssih=RR·: -tsi
280 **To do**.....əs·in, as·i, a·i=RR.: -i, 2nd conjug.
281 **To blow out**.....əs'qul, és'qul, e'qô (H.), it'séy (L.)=RR.: 'qul
282 **To smell** (v. intr.).....etsin, etsèn, aɭtsèn, əɭtsən=RR.: -ts-n
283 **To go out**.....thé-nəcya (C.), thi-néssai (M.), thi-na-déca. =RR.: thi from "door" and "walk.
284 **To prick** v. intr.).....élt'si, wet'si, əlt'sik, səɭtsik, səlt'si=RR.: t'si
285 **To fry**.....əs'tés, és'téc=RR.: -'tés, "coals."
286 **To steal**.....ənəs-î (Ch.), enes·i (M.), ene·i(H.),eni-î, (L.)=RR.: n-·i
287 **To fall down**.....na-zt'sət, na-st'sər, elt'sət (L.), na-dekwé (H.)=RR.: na (*i.e.* relation to the soil (ni) and -t'sət, expressive of the locomotion of a single object
288 **To kill** (many pers-).....əsran, esran, eskran, ekun (H.), iran (L.)=RR.: -ran and convertible kan
289 **To cut** (with axe).....əsseɭ 2nd pers. în-tseɭ, destseɭ, dêkfwin=RR,: -tseɭ, "axe."
290 **To cut** (with scissors) ... ..əs'tas, és'tac=RR.: -'tas
291 **To grease** (friction).....əstɭə (C.), eltɭar (A.L.), eskɭar (M.), ekɭé (H.), aɭkɭé (L.), estɭar (Slaves)=RR.: -tɭ-
292 **To deceive**.....nəs·a, nes·a, ne·a, ni·é=RR.: n-·a
293 **To mistake** (make a).....nes'ta, nîs'ta, nê'ta=RR.: n-'ta
294 **To command**.....əs·a, es·a, e·a, âɭ·é=RR.: -·a
295 **To take** (v. tr.).....əstcût, éstco, etcu=RR.: -tcu
296 **To hold**..... usthən, usthun, uthon, uɭthan=RR-: uth-n
297 **To teach**.....hwonəsthan, unesthan, unetheñ, uneɭthan =R.R.: un-th-n
398 **To be afraid**.....nəzqèt (C.), nesqéd (H.), neɭqét (L.), nesqér (M.)=RR.: n-qét
299 **To hide**.....na-nes·i, na-ene·i, ne-niɭ·i=RR.: - -·i
300 **To loosen**.....'ké nas·ək, 'ké nae·a, berañ nes·ar, 'ké ney·at=RR.: n-·-
301 **To be daylight**..... .....yəɭkrai, yelkrañ, yekrañ, neɭkrèn=RR.: -kr
302 **To count**.....ustho, ustha, udetha (H.)=RR.: -u-th-
303 **To exist, there is**.....hunli (C.), uñli (M.), guñli (H.), goñli (Ch.), koñli (L.) =RR.: unli
304 **To swim**.....əspiɭ (C.), espeɭ (M.), epie (H.)=RR.: -pi

PRONOUNS.

305 **I**, Fr. "moi".....si (M. C. L. Bab. &c.), sit (Ch.), seni (H.=RR.: s-
306 **Thou**, Fr. "toi".....nan (L.), nèn (M.), nîn (Ch.), nyən (C.), neni (H.B.)=RR.: n-n
307 **It**, Fr. "lui, elle".....(non-human) e (C.), ey (L.), yèy (B.), eye (Ch.), eyi (M-H.) =RR.: e

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308 **He, she,** Fr. "lui, elle" ....(human) èn (C.), éyèn (Ch.), edîni (M.), etîni (Y.K.), edetan (L.), edeteni (H.)=RR.: e (3rd pers.) and n (from de*n*e, tə*n*e, etc., "man.")

309 **We,** Fr. "nous autres" .....nɹôn (Ch.), nuɹwun (L.), nuni (M.), nakheni (H.), hwèni (C.)=RR.: same as

310 **You,** Fr. "vous autres".. . .ɹón (Ch.), nuɹwun (L.), nnûni (M.), nakheni (H.), nuhni (C.)=RR.: n-n

311 **They,** Fr. "eux, elles"..... enè (C.), éyène (M. Ch.); ekhedetan (L.), ekhedeteni (H.) =RR.: same as that of "he, she," plus : ne (sign of plural) or khe (sign of plural).

312 **This** .....ntî (C.), dji (L.), diri (M.), didi, dedi, teri, tiri=RR.: tî

313 **That**.....nyu (C.), eyi (M.), etc., as "It." RR.: y-

314 **What?** (in compos.).....ta (C., Ch., H., L., Bab.), té (L.): etla (M.)=RR.: t-

315 **What?** (with a noun).....tî (C.), ttcidi (L.)=RR.: same above (314).

316 **My** .....s, sə, se, si, ci (N.)=RR.: s

317 **Thy** .....n, nə, ne, ni (N.), nyə, nye (C.)=RR.: n

318 **His, its** .....p, pə, pe, be, bi (N.), və (L.), vi; u (C.), hwo (C.)=RR.: p, u

319 **His** (third pers.) .....y, yə, ye, yi (N.); we (D.R.)=RR.: y

320 **His** (reflective) .....t, tə, te, ti, ta, de=RR.: t

321 **Our** ..... nu (M.), ne (C.), ɹɹo (Ch.), nurwe (L.), nakhe (H.)=RR.: n-

322 **Your**..... .....nuh (C.), nohwe (C.); other dialects as above (321).

323 **Their**.....ube (M.), ope, opə (L.C.); ku (Ch., B., H., L.), ko (L.)=up; ku.

INVARIABLE WORDS, CONJUNCTIONS, POSTPOSITIONS, ADVERBS, ETC.

324 **If, when** (future non-interrog.)de, te, ènde, nide, anide, dji (L.)=RR.: te. Is a postposition.

325 **Lest** ....'qa, in all the dialects, except in (L.), 'qeñ=RR.: 'q- Postposition.

326 **In** (side).....yé (M.), yo, yi (N.); pît (C.)=RR.: y- Postposition.

327 **On** .....'kət (C.), 'ké (M., H., C.), ki (?) (N.), 'kie (D.R.), 'krage (L.)=RR.: 'k- Postposition.

328 **Amidst**..... ....tha (M.H.), thèt (L.), thəɹ (without movement), thəz (with mov.) (C.)=RR.: th- Postpositions.

329 **With** .....pəɭ, peɭ; yeɭ, etc. Nos. 316 to 323 with ɭ added to the pron. Postposition.

330 **Without**.....éd (C.), edèn (Ch.), ediñ (M.), etiñ (H.), etèñ (D.R.), atan (L.)=RR.: -t- Postp.

331 **In the middle** .....niz, nize, djizə (L.)=RR.: -iz

332 **For, owing to** (me, etc.)....(s)a (M.. H., Ch., etc.), (s)iét (L.), (s)pa (C.)=RR.: except in C. it consists simply in the vowel *a* added to the RR. of the pronouns. Postp.

333 **To** (marks direction) .....t'sèn, t'sən=RR.: t's-n. Postp.

334 **Close to** (me, etc.) .....ran, rén, ron, roh, rə, rane=RR.: r-. Postp.

335 **By the side of** .... .zih, zire, zige, zégə=RR.: zi- Postp.

CONJUNCTIONS AND ADVERBS.

340 **And, also** ....tca, tci, tco, tcu, tcrañ, tciñ=RR.: tc-

341 **However** .....khulu, kholu, khuli (all initial); kan'te, kwalan'te, kulan'te (final)=RR.: kh-l-; k-'te

342 **Far** .....neza (L.C.), niza (M.). nizjéd (L.), nirwa (H.), inzath (N.), niɬtza· (C.)=RR.: n-z-

343 **Farther** ....(yu)·ən, (yu)·az, etc.; (oñ) ·ən, (oñ)·az, etc.=RR.: The hiatus preceded by the complement and followed by the postposition.

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344 **Well** (in compos).....sa, sañ, se, siè, sô, su=RR.: s and a vowel sound
345 **Badly** (in compos).....tza, tzəɪ, dza ; tsé, tsa. tsen=RR.: tz or t and any sibilant.
346 **Above**.....yetare (M.), yutare (M.), yetagə (L.), yatige (B.), yateye (D.R.), yuto (C.), yutih (Ch.), yetək (L.C.)=RR.: -t- The syllables yu, ye, ya, are merely to give the adverb an additional meaning untranslatable in English. They can be replaced by several other particularizing particles.
347 **Below**.....yuyo (C.), yayək (L.C.), yayaɪ (Ch.), yaye (M.), yayure (D. R.), yuyuro (A.L.), etc-=RR.: -y- Same remark as at No. 346.
348 **Here**.....djyañ (M.), djyuñ (H.), djun (B), djyèn (L.), nqan (C.), nən-qan (Ch.)=RR.: dj-n or its equivalent (even phonetic-ally) q-n.
349 **There**.....Eyèr (M.), éyét (Ch.), eyédi (B. H.) ; zjig (L.)=RR,: No. 307 with localizing consonant t or r.
350 **Knowingly** and **spitefully**.aonitɐ (M. C.), aunitɐ (L.C.), awenile=RR.: diphth. au-nitɐ

WORD FORMATIVE ELEMENTS.

351 **Reduplication, mark of** ..na in all the dialects and N., except in L. and B., nè. RR. =n-
352 **Reciprocity**.....ɪ, ɪe, əɪ, éɪ ; ñi (L.)=RR.: ɪ ; ñi
353 **Reflection**.....ede, ədə, etə, atə=RR.: -t-
354 **Rejection**.....ən, ˈañ, ˈoñne=RR.: ˈ with a nasal sound.
355 **Relation to water**.....tha in all the dialects except in L.: thé.=RR.: th- 96.
356 **Relation to the fire**.....tsé, tsiye, tci, kfwi.=RR.: ts-and
357 **Relation to the soil**.....ni, ne=RR. 70.
358 **Amplificative**.....tco, tcâ, tcor, tcore, tstcyé=RR.: same as No. 234.
359 **Diminutive**..... yaz, yaze, aze ; tsəl, tsél, tséle.=RR.: same as No. 9 and No. 235.

NUMERALS.

360 **One** (thing).....iñɪare (M.), inɪagé (H.), inɪèg (L.), iɪo (C.), itɪi (Ch.), ɪ'kre (L.C.)=RR.: -ɪ-
361 **Two** (things).....nakhe (M.), nañkhe (C.), nakrèñ (L.), nañkhô (L.C.), oñkhe (H.), nèɹk (Bab.)=RR.: na, "again" and khe "feet."
362 **Three** (things).....thare (M.), thage (H.), thake (L.C.), thièg (L.), tha (C.), thai (Ch.)=RR.: th-
363 **Four** (things).....dîñri (M.), dîñyi (H.), tînqi (Bab.), təñge (C.), tankre and tan (L.), tîñ (Ch.)=RR.: t-ñ
364 **Five** (things).....əskoñla (L.C.), əskoñlai (Ch.), kwollai (C.), sê-sunlare (M.); lla-'ke (H.)=RR.: -k-lla ; and "hand -on."
365 **Six** (things).....éɪ'ke-thare (M.), éɪ'kə-thai (Ch.), ɪkə-tha (C.); et'sèn-thage (H.), etsé-thédji.=RR.: "mutually-on-three," *i.e.*, "on both it is three."
366 **Eight**.....éɪ'ke-dîñri (M.), ɪ'kə-təñge (C.), etc., RR.: same formation as 365. The other numbers are not roots.
367 **First**.....tsé (M. and Bab.), ekfwé (H.), tci (L.); ət'qan (Ch.); tcu (C.)=RR.: ts-: 'q-n
368 **Yes!**.....a (C.) and a ˈa, héñ (M.), hénhén (S.H.), haha (L.), iñ ˈîñ (Ch.)=RR.: a vowel.
369 **No!**.....to (L.C.), tu, du (H.), taudi, taodi ; akrwa (L.): awəntuh (C.)=RR.: t-
370 **Take this!**.....naˈ (C.,Ch.), na (L.), nañ (M.), noñ (H.)=RR.: n-

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RECEIVED,
OCT 28 1893
PEABODY MUSEUM.

NOTE ON OCEAN STEAM NAVIGATION.

By Sandford Fleming, LL.D., C.M.G., Etc.

(Read 17th December, 1892.)

I ask your permission to offer some remarks on a subject which cannot fail to command the attention of the members of the Institute.

We are all familiar with the wonderful development of that service, which has brought countries widely separated by the sea, into nearer and closer relationship. We have had our attention directed to the further development of ocean steamships and likewise to projected "fast lines" to Europe, which, by abridging the period of the Atlantic voyage, are designed to bring the two continents into closer intercourse.

I do not doubt that in due time these projects will in some form be carried out with the gratifying result that they will tend to advance Canada among the nations by more firmly establishing her position on the highway of the world's commerce.

It is not my present purpose to dwell at any length on the possibilities of the future with regard to the application of steam machinery to the navigation of the ocean. My immediate object is to revert for a moment to the infancy of our present steam marine, to go back to the day when the first steam-ship started on her voyage across the Atlantic, when the passage between America and Europe by the agency of steam power was regarded as an experiment.

Sixty years ago the voyage was made by sailing ships. The fathers of many of us could have testified how long, how tedious and how trying the voyage then was, for it occupied frequently from one to two months. In modern times the trip across the Atlantic is reduced to a single week, for indeed by some of the best steam-ships it is generally accomplished in less than seven days, and we are encouraged to believe that before many years the passage will be made in a still shorter period.

A few weeks back the Engineering Society of Liverpool had the subject under examination, and it was then brought out in discussion that the Atlantic had been crossed by steam-ships no less than 3,800 times within the twelve months ending the 1st of October last, being on an average more than ten departures, that is five from each side, per day for

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every day in the year. It was moreover affirmed in the discussion that "a 26-knot speed is not beyond the scope of advancing improvements."

As the narrowest part of the Atlantic extends from Great Britain to Newfoundland, the distance could be traversed by a 26-knot ship in 63 hours. Even a 22-knot ship (and this rate is about the present limit) could perform this part of the voyage in 75 hours. Thus it appears that enormous as has been the steamship development in the past, practical men do not consider it has reached its final stage. The ratio of increase may in future be diminished, but with all the evidence of progress before us, is it unreasonable to expect that a few years hence (assuming Newfoundland within the Canadian confederation) improved steam-ships will bring the shores of the Dominion within less than three days from the shores of the Mother Country, and that the passage will be made with the regularity of a daily ferry?

As Canada has acted a primary part in inaugurating the ocean steam service as it now exists, and which is so full of promise for the future, it appears to me becoming that we should cherish the memory of her sons, who, by their energy, skill and enterprise prominently aided in its development. Of those whose lives were closely identified with its first inception, the last survivor, Mr. James Goudie, lately died, and his death suggests that before the year comes to a close, steps should be taken to pay honor to the men who built and sent to sea the first regular steam-ship "to battle with the billows of the Atlantic." Is it not our duty to remember gratefully our fellow-country-men, who had the courage to undertake, and who successfully accomplished an enterprise, great in its conception and yet immeasurably greater in its consequences? It is no mere figure of speech to claim that these early efforts to which I will now allude, in no small degree assisted in inaugurating a system of inter-communication by sea, which has revolutionized commerce, and advanced the cause of civilization in the four quarters of the globe.

A paper was read last year before the Literary and Historical Society of Quebec by one of the Vice-Presidents, Mr. Archibald Campbell, on the passage made by the steamship "Royal William," nearly 60 years ago. Mr. Campbell enters into full particulars of the event, furnishes a diagram of the vessel together with letters from various individuals, comprising the ship architect, the builder, the captain and others in support of the claim that the first ocean steamship was built in Canada. Among other authorities, he refers to Mr. Kivas Tully, who, he states, "delivered a most valuable lecture in Toronto thereon before the Canadian Institute in 1877." Mr. Tully's paper cannot be found, but with the aid of the Assistant Secretary of the Institute, who has examined the

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minutes, I have learned that it was read on Saturday, December 1st, 1877. There is a full report in the *Globe* of Dec. 3rd following, which I have examined. Mr. Tully gives a full and interesting account of the researches made by himself and others. Mr. Tully's paper is undoubtedly a valuable record and I respectfully suggest it should be published in our proceedings.

Mr. Campbell and Mr. Tully agree in the main; in my judgment the following conclusions are incontestably established :—

1. The first steamship to cross the Atlantic was built by a joint stock company at the yard of Campbell & Black in Quebec, in the year 1830-31.* (See information in foot-note, for which I am indebted to the kindness of Mr. Archibald Campbell, since this paper was read.)

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*According to the Register of the "Royal William" in the Customs House, Port of Quebec, dated 22nd August, 1831, the subscribing owners, as Trustees of the incorporated "*Quebec and Halifax Steam Navigation Company*," representing sixty-four shares, were William Findlay, William Walker and Jeremiah Leaycraft, of Quebec, Merchants.

SHAREHOLDERS OF THE INCORPORATED COMPANY.

Parties constituted and declared to be one body corporate and politic by the name of "*The Quebec and Halifax Steam Navigation Company*," under 1st Wm. IV., Cap. 33 of Lower Canada Statutes :—John Forsyth, Wm. Walker, Wm. Finlay, John Caldwell, Jeremiah Leaycraft, Henry Le Mesurier, William Price, Matthew Bell, George Keys, William Pemberton, George Pemberton, Henry Pemberton, John Saxton Campbell, Robert Paterson, Robert Shortis, James Hamilton, James Gibb, Chas. Felix Aylwin, Hypolite Dubord, Noah Freer, Augustus Freer, Charles A. Holt, Francis Bell, James Hunt, Samuel Neilson, Wm. Lampson, John Leather, Robert Shaw, Wm. Phillips, John Ryan, James Stansfeld, Wm. Sheppard, Thos. Tucker, John Jones, jr., Benjamin Torrance, Wm. Henderson, Alexander Simpson, James Clearihew, Peter Paterson, Charles Francis Roy, George Black, Joseph Stone Shaw, John Racey, Duucan McCallum, Colin McCallum, Joseph Dyke, Robert Pope Ross, John Fraser, John Malcolm Fraser, John Bell, John Miller, James Saunders, James McKenzie, Margaret Urquhart, John Lambly, Alexander Morrison, Thomas Gordon, David Logan, George Taylor, Allison Davie, Robert Dalkin, John Munn, John Douglas, Archibald Campbell, Wm. Henry Roy, Wm. Carter, John McLeod, John Kerr, Robert Daunton, Robert Richardson, Thomas Gibb, Dominic Daly, Joachim Mondor, James Edie, Alexander Clarke, John Richardson, George Moffat, Peter McGill, Adam L. McNider, John Torrance, Robert W. Harwood, Hector Russel, Hart Logan, Lewis Gugy, Chas. Wm. Grant, Horatio Gates, Nathaniel Jones, Wm. Ritchie, James Brackenridge, Wm. Budden, Andrew Shaw, Samuel Cunard, Richard Harney, sr., Richard C. Tremain, Henry Prior, John Rutchford, jr., Alex Murison, Frederick W. Clarke, Edward De Blois, James Mitchell, J. G. A. Creighton, Thomas Grassie, Joseph Starr, Andrew Belcher, George Rundell, James Bridge, Robert Romans, Adam Esson, Temple Lewis Piers, John Alexander Barry, James Bain, George Smith, John Howe, George Russel, Alexander McDonald, James McDonald, William Carritt, J. Tobin, Mickel Tobin, George P. Lawson, Edward Potter, James H. Tidmarsh, Alexander Keith, Eliza Leggatt, William Brahm, Henry Lockeyer, Adam Dechezineany, Nicolas Le Cain, George Handley, Conrad West, John Stayner, Richard Marshall, Richard Davis, James Ritchie, Charles Delvolf, John Johnson, John Johnson, jr., Chas. Fairbanks, Alexander Primrose, Alexander McGregor, John Munro, David Hare, Thos. Maynard, Thos. Grant, Andrew Fraser, Peter McNab, Robert Downes, James T. Avery, Robert Dawson, Wm. Black,

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2. The designer of the ship and superintendent of its construction was Mr. James Goudie, born in Quebec, 1809, and who died 1892.

3. This ship was launched in the spring of 1831, with more than ordinary ceremony. The governor of the province Lord Aylmer was present

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Jonathan Tremain, J. Boggs, George Hartshorne, Wm. Mortimer, John Barron, Wm. Stairs, Wm. M. Allan, Joseph Austin, George Innis, Patrick Ross, James Leisham, Wm. F. Young, Rufus Black, Joseph Danby, George Turner, George Barton, Samuel Davis, Francis Le Cain, James Wilkie, Samuel Mitchel, David Starr, James Robb, James L. Stair, Ed. M. Archibald, E. Ross, I. Primrose, James McNab, Jasper Reoust, Allan McDonald, I. Shannon, Joseph Allison, George Young, Wm. Young, Philip J. Holland, Daniel Starr, L. Yates, Wm. McCara, Charles Keefler, Charles Rigby, Wm. Foster, John Romans, Wm. Woodill, Jas. Donaldson, Benjamin Schneller, Alexander Rankin, Thos. H. Peters, James A. Street, Alex. Fraser, jr., John Fraser, Andrew Crane, Joseph Allison, Hugh Morrell, Wm. Lock, Joseph Cunard, Richard Blackstock, Christopher Clarke, Gilbert Henderson, Robert Henderson, Patrick Henderson, Joseph Russel, John Hawbolt, James Letson, Asa Willard, J. M. Johnson, Alex. P. Henderson, John S. Willaston, Thomas C. Allan, Wm. Carman, jr., George Taylor, Henry Cunard, Wm. Eade, Ed. McQuillan, Joseph Samuel, Mary Little, Daniel Kieth, Caleb McCully, Alexander Sherriff, John Samuel, Gorwin Rainie, Francis Peabody, Martin Cramey, Alexander Key, Noah Freer, Francis Durette, James Black, James McDonald, John Torrance, William Price, William Walker, and John Jones.

CERTIFICATE OF COLLECTOR OF CUSTOMS FOR PORT OF QUEBEC.

REGISTER OF STEAMSHIP "ROYAL WIILLIAM."

No. 13. Port of Quebec. Dated 18th May, 1833.

Name, "Royal William." Burthen, 363 60-94 tons. John McDougall, Master. Built at this port in the year 1831, which appeared by a former certificate of registry, No. 42, granted here the 22nd August, 1831, now delivered up and cancelled upon transfer of property.

Name and employment of surveying officer. (Signed) C. SECRETAN, Acting.

One deck and round-house, 3 masts; length, 160 feet; breadth taken above the main wales, 44 feet; height between decks, or depth of hold, 17 feet 9 inches. Schooner rigged with a standing bowsprit; square sterned; carvel built; quarter badges; scroll head; admeasurement afloat; propelled by steam, with wheels or flyers at each side.

Subscribing Owners.		*Shares.*
James Bell Forsyth,	of Quebec, Merchants.	Ten.
Jeremiah Leaycraft,		Ten.
Henry Le Mesurier,		Ten.
Other Owners.		*Shares.*
Mathew Bell,	of Quebec, Merchants.	Fourteen.
Noah Freer,		Ten.
Henry John Caldwell,		Ten.

De Novo, London, 22nd Nov., 1833.

A true copy.

Customs House, Quebec, 2nd March, 1891.

(Signed) D. D. O'MEARA,

Acting Registrar of Shipping.

The steamship "Royal William," McDougall, Master, cleared on Saturday, 3rd August, 1833, for London, and sailed at 5 o'clock, a.m., Monday, 5th August.

The "Royal William" arrived at Gravesend, 25 days passage from Pictou, Nova Scotia.

(Signed) W. DUNSCOMB,

Collector of Customs.

Port of Quebec, 5th February, 1872.

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with his staff, the military authorities and the band of the 32nd Regiment. The event was further honored by the presence of Lady Aylmer who in the customary manner gave the vessel the name of the "Royal William" after King William IV., then on the throne.

4. The ship was towed to Montreal to receive her machinery,* and on being fitted for sea, her first voyage was to Halifax. Before setting out for England, she traded between Quebec, Halifax and Boston. She was the first British Steamer to arrive at the latter port.

5. In the list of owners appear the names of the three brothers Joseph, Henry, and Samuel Cunard of Halifax.

6. Her dimensions were length 160 feet; hold 17 feet 9 inches; breadth outside 44 feet; breadth between paddle boxes 28 feet; she had three masts schooner rigged; builder's measurement 1,370 tons; with accommodation for 60 passengers.

7. She left Quebec for London August 5th 1833, called at Pictou, Nova Scotia, to receive coal and overhaul machinery. She re-started from Pictou, August 18th, with seven passengers, 254 chaldrons of coal and a light cargo. She encountered a terrific gale on the banks of Newfoundland which disabled one of her engines. The passage from Pictou to London occupied 25 days.

8. Ten days after her arrival in London she was chartered by the Portuguese government to enter the service of Dom Pedro as a troop ship.

9. In 1834 she was sold to the Spanish government, was converted into a war steamer, and under the new name, of "Isabel Secunda," was employed against Don Carlos. A letter from the well known Alexander Somerville, who, as he tells us, joined the British Legion and became a colour-sergeant, appeared in the Toronto *Globe*, May 15th, 1876. This letter describes an incident which came under his own observation, May 5th, 1836, off St. Sebastian, Bay of Biscay. Mr. Somerville remarks, that the Canadian built ship "Isabel Secunda," (originally the "Royal William,") "was the earliest steamer of war in the history of nations to deliver a hostile shot."

10. After an eventful service for some years she was sent to Bordeaux for repairs, when her timbers were found to be somewhat decayed;

* I am informed on excellent authority, that the engine, boiler and machinery were furnished by the Montreal works, known as St. Mary's foundry, Charles Wm. Grant, Baron de Longueiul, proprietor. The signature of the Baron, Charles Wm. Grant, is attached to the original list of shareholders of the incorporated steamship company, and it is stated by his descendants that he sunk of his private means in all about $40,000, in the venture of the "Royal William." S. F.

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the engines, however, were in serviceable condition, and were transferred to a new vessel, a second "Isabel Secunda," to form part of the Spanish navy. What was left of the original "Royal William" remained a hulk in the French port.

Both Messrs. Tully and Campbell allude to the claims set up in the United States on behalf of a ship, "The Savannah," as the vessel which made the transatlantic voyage under steam at an earlier date. An article making this claim appeared in *Harper's Magazine*, for February, 1877. We there learn that the "Savannah" was built in New York and launched on August 22nd, 1818. She was 350 tons burden. A steam engine was placed on deck, and shifting paddle wheels were contrived so that they could be lowered over the sides of the vessel in calm weather and brought again on deck when the wind rose. She had small capacity for coal, indeed it is doubtful if she consumed coal, a description of fuel but little used in the United States in those day; at least one authority states that the only fuel consumed on the voyage was wood. It is not possible to differ from the conclusions formed by Messrs. Tully and Campbell that the "Savannah" was simply a sailing ship, to which had been added light paddle wheels capable of being driven by steam machinery, the whole of a somewhat rude description yet in a way available for keeping the vessel in motion when the wind failed.*

The "Savannah" crossed the Atlantic in 1819. She left Savannah on the morning of May 22nd and reached Liverpool on the evening of June 20th making the passage in less than thirty days. It is stated that steam was used on eighteen days, and the log records that the shifting paddles were used for a few hours at a time when the condition of wind and sea admitted, but it is obvious that the sails were chiefly depended upon throughout the voyage.†

The "Savannah" remained at Liverpool from June 20th until July 23rd when she sailed for the Baltic and at the ports where she called,

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* A writer in *Scribner's Magazine*, May 1887, states, "the paddles were constructed to fold up and be laid on deck while not in use," and the "log" describes the process of shifting the wheels, which did not occupy more than 30 minutes.

† *Popular Science Monthly* New York, January 1893, after an examination of the Log of the Savannah, has the following: "The voyage to Liverpool began May 22nd, 1819. On the 24th, at 5 a.m. the Savannah got under way off Tybee Light and put to sea with steam and sails; at 6 a.m. left the pilot; at 8 a.m. took off the wheels in twenty minutes, this was to insure the wheels getting safely to Liverpool. The Savannah reached Liverpool, steaming up the Mersey, in twenty-nine days eleven hours from Savannah, having run eighty hours under steam." This information gives for the whole voyage 707 hours, of which 80 hours were under steam, and 627 hours without steam being used. Possibly the paddles were employed on eighteen days, for a few hours each day. S. F.

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excited some curiosity. On Oct. 10th she set sail from St. Petersburg on her homeward voyage and arrived at Savannah, Nov. 30th. There is no mention of the paddles having been used on the return voyage or indeed at any time after she left St. Petersburg. The writer in Scribner states that on the return of the "Savannah" to the United States the machinery was removed and she assumed her original character as a sailing ship. She was finally wrecked, and found a resting place on the south shore of Long Island.

It may not be out of place to allude to information independently obtained with respect to both vessels. Some of the older citizens of Toronto will remember Captain Sutherland who commanded the steamer Magnet on Lake Ontario, before he met with his sad fate at the Desjardins Canal accident in 1858. He, it was, who thirty-four years earlier assisted in preparing the "Royal William" for her long voyage to England, and actually accompanied her as second in command as far as Pictou, when she left Quebec on August 5th, 1833. Many of the particulars described by Messrs. Tully and Campbell I had from the lips of Captain Sutherland, who related them to a number of gentlemen of whom Sir George Simpson, Governor of the Hudson Bay Company was one, on a passage by water from Toronto to Kingston about the year 1850. This independent testimony fully corroborates that which has been set forth respecting the "Royal William."

I had occasion ten years ago to make enquiries with regard to the "Savannah." I addressed a citizen of Savannah whose acquaintance I had made after the war, when he visited Canada. This gentleman at my request examined all the records to be found in his native city respecting the ship "Savannah" and her means of propulsion. He wrote me at length, and described the machinery attached to her as being of a somewhat rude description; there was nothing to show, he informed me, that it had been continuously employed on the voyage. I quote part of his letter: "She resembled very much in mould an old United States frigate. The hull was surmounted with a stack and three masts—fore, main and mizen—and was provided with side wheels of a primitive pattern, left wholly exposed to view, and so arranged that they could at any time be unshipped and the vessel navigated by sails only."

Giving the "Savannah" the fullest credit for all that may be due to her, it cannot be affirmed that she crossed the Atlantic under steam, nor can it be pretended that she was the pioneer of the ocean steam-ship service of to-day, in any sense. It may with greater truth be held that the "Savannah" had a deterring influence on the further efforts of enterprising ship-builders, and that the introduction of transatlantic steam-

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ship service was actually retarded by the ill-success of the attempt of 1819. The mode of propulsion employed at intervals on the eastward voyage of the "Savannah" was abandoned and she returned to America under sail. Its partial use on the first voyage stimulated no effort to alter or improve the makeshift machinery used, or to introduce something more perfect and more permanent on ships subsequently constructed. It set in motion no attempt to send to sea a second "Savannah" to cross the Atlantic by steam power. The only other example on record of a vessel similar to the "Savannah" is the "Enterprise," a ship which made a voyage in 1825 to India assisted by steam. Like the "Savannah" she depended on her sails, using steam at intervals when there was no wind. This adventure, like that of the "Savannah," was entirely barren of any beneficial results. Attention continued to be directed to the improvement of ordinary sailing ships, and as a consequence there came into existence a magnificent class of vessels known as "clippers," propelled only by wind and sail. It was not uncommon for ships of this class to cross the Atlantic in half the time occupied by the "Savannah." If we except the "Royal William" in 1833, there is no record of any ship, propelled in whole or in part by steam, having made the passage between any British port and any American port for nearly twenty years after the performance of the "Savannah."

The "Royal William" exercised an influence of a directly opposite character. One result was to make clear that the transatlantic vessel of the future was to be a steam-ship. Sir Samuel Cunard with his two brothers were, as shareholders in the Quebec and Halifax Steam Navigation Company, part owners of the "Royal William." Cunard was a man of great business ability, rare shrewdness, and with much originality of character. The success which attended the experiment led him to foresee the possibility, nay the certainty of future triumphs. It became evident to his mind that sailing ships as mail packets were doomed. He at once grasped the situation, and determined the course which he subsequently pursued. His effort was to obtain a contract with the British Government for carrying the mails, and after constant perseverance and great delay, he finally succeeded in 1838. The service agreed upon was fortnightly in the first place, and afterwards weekly. The "Britannia," the "Acadia," the "Caledonia" and the "Columbia," were at once placed under construction, and these four vessels formed the beginning of the magnificent fleet of steamships which ever since have borne the honoured name of Cunard.

Quite distinct from the action of Mr. Cunard, and while his negotiations were in progress, the British and American Steam Navigation Company

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was founded by enterprising merchants in the Mother Country. This Company was formed in 1836, within three years after the passage of the "Royal William," and immediately the construction of the "Great Western" specially for the Atlantic voyage was undertaken; the "Sirius" was chartered for the same purpose. These were the first steamships to cross the ocean after the "Royal William." The "Sirius" left London on April 4th, 1838, the "Great Western" left Bristol three days later, and by a singular coincidence they both steamed into New York Harbour on St. George's day. Other steamships followed in rapid succession, among them I may mention the "Liverpool" and the "Royal William;" both were built in England, and both began their trips a few months after the "Sirius" and "Great Western." The latter "Royal William," the second of this name, has led to some confusion, from being better known than the Quebec vessel built eight years or so earlier; and it has caused the first "Royal William" somewhat to pass out of memory.

To my mind it is incontestably established that the memorable voyage of the Canadian built "Royal William" from Quebec to London in 1833, must be held to be the first passage across the Atlantic under steam; that passage triumphantly demonstrated the practicability of steam navigation on a voyage between the two continents, notwithstanding the declaration of Dr. Lardner, who at that date pronounced it "perfectly chimerical, and" to use his own words, "they might as well talk of making a voyage from New York or Liverpool to the moon."

The Canadian built "Royal William" undoubtedly proved to be the pioneer of Atlantic steamships. It cannot be disputed that she was the forerunner of the Cunard line, and as such she was equally the forerunner of the thirty-four other lines which to-day run regularly between America and Europe. It must certainly be admitted that this pioneer ship has had no small influence on the ocean steam service of the globe —a service which embraces the great lines running to India, China, Japan, South Africa, South America and Australia, a service consisting of ships which may be counted by thousands with a gross tonnage of 12,000,000 tons. And to us Canadians and British subjects it is interesting to note that *two thirds* of this enormous tonnage belong to Great Britain, Canada and the Colonies, while the remaining *one third* may be claimed by all the other nations of the world.

We must all regard with satisfaction the circumstance that Canada has the proud distinction of having taken the initiative in applying science and mechanical skill to a purpose which has led to such splendid results. Is it not a national duty that we should honour the memory of the men

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whose skill and enterprise have in advancing these results done honour to Canada? Would it not therefore be becoming on the part of the Canadian Institute to initiate a movement to establish some enduring record in commemoration of the voyage of the "Royal William" in 1833, and in honour of those connected with her? The record might take the form of a brass memorial tablet, or as may hereafter be determined, placed in some fit position in the halls or corridors of the Parliament Buildings at Ottawa. This course is followed in the mother country, where records of great historical events can be seen in the entrance Hall of the Houses of Parliament at Westminster.

Whatever form the suggestion may assume, or wherever placed, it will be a lasting tribute to the skill and courage of the men associated with the first transatlantic steamship. Such a record is due to our country and our countrymen, and the proposal having its origin in Toronto will be accepted as a graceful compliment to a sister city, where the "Royal William" was designed, constructed and sent to sea. The memorial itself will denote an incident in our annals of which all Canadians of whatever race, may feel allowable pride. It will indicate the point of commencement of a new era in the history of navigation. It will mark the part which Canada has played in the inauguration of a system of inter-communication which has contributed in a remarkable degree to the advancement of civilization; and which has exercised and will long continue to exercise an important influence on the destinies of the human race.

NOTE ON EARLY STEAMBOATS.

BY SANDFORD FLEMING, LL.D., C.M.G., ETC.

(Read 17th December, 1892).

There are many records of attempts to propel vessels by steam before the beginning of the century. The most successful were those of Mr. Miller, on Dalswinton Loch in Scotland in 1788 and of Mr. Symington on the Forth and Clyde Canal some twelve years later. These and other inventors devoted much time and money to accomplish the object they had in view and much credit is due to them for the ingenuity displayed;

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but these early efforts were of the character of experiments, and it is generally conceded that the first really successful attempt to navigate water by steam power for regular public traffic was in 1807.

In that year a vessel named the "Clermont" was launched on the Hudson. She was built by Mr. Fulton, who had visited Scotland and profited by the efforts of Miller and Symington. Fulton was assisted with money by Mr. Livingstone, then American Minister at Paris. The "Clermont" was 130 feet long with a breadth of 16½ feet. Her engine was made in England, at the celebrated works of Boulton & Watt. She attained a speed of five miles an hour, proved a practical success and carried goods and passengers between New York and Albany for some years.

If we have the best grounds for stating that to Canada is due the honour of sending to sea the pioneer ocean steamship, we must fully acknowledge that the first steamboat in the world, regularly and continuously engaged in passenger traffic, was produced in the United States.

In 1809, two years after the "Clermont" made her trial trip on the Hudson, the first steamboat appeared on the St. Lawrence. I am indebted to Dr. S. E. Dawson for the following interesting details: "On November 3rd, 1809, the steamer "Accommodation," carrying ten passengers, left Montreal on Wednesday at 2 o'clock in the afternoon, and arrrived at Quebec on Saturday at 8 o'clock in the morning. She anchored every night, and that practice was continued for many years on the St. Lawrence, so that of the 66 hours which intervened between her departure and arrival at Quebec, 30 hours were spent at anchor; the trip was therefore made in 36 hours. This steamer was built for John Molson, the first of the name. She was 75 feet long in the keel and 85 feet long on deck."

In addition to these details, the following which appears in the *Quebec Mercury*, after the arrival of the vesssel on her trial trip, may be of some interest: "On Saturday morning at 8 o'clock, arrived here from Montreal, being her first trip, the steam-boat "Accommodation," with ten passengers. This is the first vessel of the kind that ever appeared in the harbour. She is continually crowded with visitants. She left Montreal on Wednesday at two o'clock, so that her passsage was sixty-six hours, thirty of which she was at anchor. She arrived at Three-Rivers in twenty-four hours. She has at present berths for twenty passengers, which next year will be considerably augmented. No wind or tide can stop her. She is 75 feet kee and 85 feet on deck. The price for a passage up is nine dollars, and eight down—the vessel supplying provisions. The great advantage attending

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a vessel so constructed, is that a passage may be calculated on to a degree of certainty in point of time, which cannot be the case with any vessel propelled by sails only. The steamboat receives her impeller from an open double-spoked, perpendicular wheel, on each side, without any circular band or rim. To the end of each double spoke is fixed a square board, which enters the water, and by the rotary motion of the wheel acts like a paddle. The wheels are put and kept in motion by steam, operating within the vessel. A mast is to be fixed in her for the purpose of using a sail when the wind is favourable, which will occasionally accelerate her headway."

These extremely interesting details obviously written by an eye witness describe the second steamboat which ever made regular trips in American waters, or in any part of the world for trade purposes. That she proved successful as a commercial venture may be judged from the fact that within a few years after she commenced running Mr. Molson added two other steam-boats the "Swiftsure" and the "Malsham" of increased dimensions. The former vessel was 130 feet in length of keel and 140 feet on deck with a width of 24 feet. On her trial trip, in 1813, the "Swiftsure" made the passage from Montreal to Quebec in 22½ hours notwithstanding that the wind blew strong ahead the whole distance. She beat the fastest sailing packet on the line 14 hours in a race of 36 hours. The "Malsham" was built in Montreal in 1814, and was registered at the Custom House, Quebec, May 4th, 1815. In the registry she is described as a "steam vessel worked by steam, with wheels or flyers at each side."

The successful application of steam to the propulsion of vessels being established, it soon spread to other countries. As far as I have been able to investigate the matter, regular steam boats were seen for the first time in the following order: on the Hudson, in 1807; on the St. Lawrence, in 1809; on the Clyde, in 1812; on the Severn, in 1813; on the Mississippi, in 1814; on the Humber, in 1814; it was 1815 before the first steamboat, a small vessel named the "Marjorie," appeared on the Thames; the same year witnessed the "Frontenac" plying on Lake Ontario. The latter steamboat was built by the enterprise of the late Senator John Hamilton of Kingston, at a cost of £20,000.

The third vessel on the list, that launched on the Clyde, in 1812, was named the "Comet." She was built by Henry Bell. Her length was 40 feet with 10½ feet beam; her draught of water 4 feet; her speed under favorable conditions was four miles an hour. She continued to ply between Glasgow and Greenock a distance of about 20 miles, for some years. The "Comet" greatly improved appears to have been transferred to the River Forth where she did her work more efficiently; she ran for a

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considerable time between the terminus of the Forth and Clyde canal and Newhaven a distance of 27 miles at the rate of 7½ miles an hour.

Much importance has been attached to the efforts of Henry Bell, the builder of the "Comet." A grateful country has evinced its appreciation by erecting a noble monument to his memory. This monument is conspicuously placed on a promontory of the River Clyde, where it may be seen by every passenger passing up or down the river. The "Comet" was the first steamboat in Europe engaged in any serviceable purpose; three years before the "Comet" was launched, Canadian enterprise placed the "Accommodation" on the St. Lawrence, and for many years this vessel continued to run regularly, carrying passengers and freight between Montreal and Quebec.

All honor to the memory of John Molson, the master mind who caused to be built and who directed the movements of the first steamboat on Canadian waters! Can we do less than find a place for a second memorial tablet to commemorate an event of no small interest in the annals of our country?

NOTE ON POSTAGE STAMPS.

By Sandford Fleming, I.L.D., C.M.G., Etc.

(Read 17th December, 1892.)

I am desirous of submitting to the Canadian Institute a matter which may possibly, to some, appear to be of little importance, but which nevertheless affects the daily lives of many of us, and in this point of view may claim public attention.

The system of adhesive stamps for the prepayment of letters came into operation during the last half century. There was not a single postage stamp in use in any part of the world before the year 1840. Now there are thousands of different kinds and they are used by millions daily by all the different nationalities of the world.

Postage stamps were officially established in the British Islands fifty-

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two years ago. The first foreign state to adopt them was the Canton of Zurich in Switzerland, in 1843. They were introduced into the United States in 1847. Throughout Europe they became common in 1849 and 1850. In Canada they were employed for the first time in 1851. Until that time the post office in the British American provinces had been controlled by officers appointed by the home government. On April 6th, 1851, the entire management was transferred from Imperial to Provincial authority and within the same year several important reforms were carried into effect. Previous to that date the charge for the carrying of letters was extremely high — inland postage averaged nine pence currency (15 cents) per letter. It was at once reduced to three pence (5 cents). For three years longer the charge on foreign letters remained at the old rates, viz., one shilling and fourpence currency (about 27 cents) on English, and sixpence (10 cents) on United States letters.

The first Post Master General for the Province of Canada was the Hon. James Morris, and it was under his administration that the reduction on the postal charge on inland letters was made, and adhesive stamps for their prepayment introduced. Canadian postage stamps, for the three penny rate, were first issued for public use on St. George's day, April 23rd, 1851.

It is with no desire to cast any reflection on Mr. Morris, under whose auspices great postal reforms were initiated, when I humbly point out that the stamps introduced by him were anything but faultless. Forty years, experience has established, that the designer whom Mr. Morris employed, failed to recognize the essential features which a postage stamp should possess; and strange as it may seem the worst features of the original faulty design still remain. From 1851 to the present date, the defective characteristics of the first stamp have in a greater or less degree been preserved in every successive issue.

Stamps of different values are necessary for the prepayment of letters and postal packets, varying in weight. Obviously, a postage stamp should on its face, plainly indicate its value, so that it should present no difficulty to the person using it. The three-penny stamp in 1851 had on each of its four corners a small figure "three" (3) to denote its value, its designer seemingly ignoring the fact that one large figure would be plainer than four or any number of small figures We may trace to this source the crucial defect of every Canadian stamp since issued, for whatever changes have been made in those printed from year to year since their first introduction, the small figures to indicate their denomination have been constantly adhered to. When we examine the whole series there is a strong family likeness in this particular. Indeed the stamps in common use to-

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day so much resemble each other that many persons can distinguish them only by close examination. Take for example the three cent and the one cent stamps; in general design they are identical, and the figures 3 and 1 in each case are so minute as to be scarcely distinguishable in an artificial light, and more especially by persons advanced in years. It is true that with the intention of assisting the eye stamps are printed in different colours; red in one case, yellow in another, green in a third, and so on; but this mode of distinction in no way mends matters to those suffering from what is known as colour blindness. In truth it aggravates the evil, as some of the colours in use render the whole design, especially in certain lights, next to invisible. It is not surprising therefore, that one stamp is apt to be taken for another, as is frequently the case, unless care be taken to seek the aid of some person whose vision is in no way defective. It cannot be held that the class of persons who in various degrees are incapable of distinguishing colours, are of no account. According to the best authority it is estimated that one in every twenty is colour-blind. This rate would give for the whole Dominion not less than a quarter of a million souls who suffer from this incapacity. With justice and reason we may ask, why should this number, or any considerable number of the population, be disregarded in a matter which affects their daily lives? I can bear personal testimony to instances constantly arising from the difficulty in distinguishing the postage stamps in common use. In my own limited sphere scarcely a day passes without meeting with petty annoyances from the cause assigned. Personal inconvenience is of small consequence as a rule; but in this case it is an experience which suggests how enormous must be the aggregate inconvenience traceable to the same cause. Moreover, the sender of letters is not the only sufferer from these petty annoyances, as letters improperly stamped have been known to remain in the dead letter office, or have had double charges levied on delivery to the receiver.

I have, by implication, cast blame on the individual responsible for the details of the first stamp issued. Referring to some old memoranda I there find the original design or rather its *facsimile* in the first proof from the engraver's plate, and I am thus reminded that the blame must rest to a large extent upon myself, inasmuch as, at the request of the Postmaster General I furnished the design bearing date February 1851. It must however be said that the stamp then issued is not the same in all respects as the present stamp. Among the changes which have been made, an effigy of the Queen's head has been substituted for *a beaver*. Her Majesty's portrait is always seen with satisfaction and few will fail to recognize the appropriateness of this change if they keep out of view the process of cancellation by the post office officials. The objection

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which must be taken to the stamps in use to-day throughout the Dominion is on the ground of the inherent defect which I have pointed out, a defect which they have inherited from the parent stamp of 1851.

Frankly acknowledging my own responsibility with regard to the objectionable feature referred to, I feel that a peculiar moral obligation is imposed upon me to endeavour to make such reparation as may be in my power, for the evils which have been transmitted to the present day through successive generations of stamps. Accordingly I take upon myself the duty of respectfully recommending that the design of our Canadian postage stamps be reconsidered and remodelled. With this in view I beg leave to offer two suggestions, viz.:—

First.—That the Queen's Head be retained but on a reduced scale and so placed that it will occupy the upper half of the stamp, leaving in the lower half ample space for a single large figure to denote the value. This course is now followed in some of the more recent English stamps, and I would instance the two pence half-penny stamp, used for foreign postage. If all our Canadian stamps were designed on this principle, the defects which have been mentioned would be removed.

Second.—Another course would be to substitute the Imperial Crown for the Queen's Head, placing it over a panel or shield on which would be inscribed in large plain figures the denomination of the stamp, in some such manner as shown in the sketch.

For those who fortunately can distinguish colours, no doubt much benefit is to be found in their use, in printing stamps of different values, but I hold that the employment of colours should be secondary as a means of distinguishing one stamp from another. I humbly submit that it should be held to be an essential feature of all stamps hereafter issued, that the distinctive number be so plain and so conspicuous and so unmistakable, as to be easily recognized by all persons under ordinary circumstances.

With great respect I submit these remarks for the consideration of the members of the Canadian Institute. If they commend themselves to the approval of this Society, the Council will, I do not doubt, deal with them in the mode which they conceive will generally best serve the public interests.

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THE MIGRATION OF THE EVENING GROSBEAK IN 1890.

By J. B. Williams

(Read December 7th, 1891.)

In a chapter on the migration and diffusion of animals in his Principles of Geology, Sir Charles Lyell writes as follows :—" Besides the disposition common to the individuals of every species slowly to extend their range in search of food, in proportion as their numbers augment, a *migratory instinct* often develops itself in an extraordinary manner, when after an unusually prolific season, or upon a sudden scarcity of provisions, great multitudes are threatened with famine."

As instances of these irregular and spasmodic migratory instincts he mentions the Leming (*Mus lemmus*) in Lapland, (countless thousands of these little creatures, once or twice in a quarter of a century, leave their homes in the mountains, and march to the sea-coast ;) and the Springbok or Cape Antelope, which used to descend at intervals of three or four years from the interior of South Africa to the cultivated districts around the Cape.

Birds as well as quadrupeds are subject to these irregular migrations.

In April and May, 1888, great numbers of Pallas' Sand Grouse (*Syrrhaptes paradoxus*) migrated from their home in Tartary to Europe, and appeared in England, Scotland and Ireland in great numbers.

They were first seen near Warsaw, in Poland, on April 21st ; near Leipzig, in Saxony, on April 27th ; but they did not reach England until about the middle of May.

Though they laid eggs in several places, they do not seem to have reared any young that first summer.

With the hope that some of them might be acclimatized to the country, Parliament passed a special Act making it illegal to shoot them until January, 1892.

Great numbers were shot before the Act came into force, but there were several well authenticated instances, of those that survived the winter rearing young ones during the summer of 1889. A somewhat similar migration of the Sand Grouse occurred, twenty-five years before, in 1863.

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The Rose-colored Pastor (*Pastor roseus*), a bird allied to the English Starling, affords another example of these irregular migrations. An immense flock of them, numbering many thousands, appeared in the neighborhood of Sophia, the capital of Bulgaria, in the month of June, 1889. They were very tame, and were easily caught by hand.

This bird's usual habitat is in Armenia, Persia, and Southern Russia.

A similar flock visited Bulgaria, twelve years before, in 1877.

In January and February, 1890, the city of Toronto was invaded by hundreds of Evening Grosbeaks (*Coccothraustes vespertina*).

This bird is described in Mr. Chamberlain's Catalogue of Canadian Birds as "an abundant resident of British Columbia, east of the Cascades, and occasionally found on the western slope, and in Vancouver Island. It is a common winter visitor to Manitoba, and a few specimens have been taken in Ontario." And in Ridgeway's Manual it is said to be an irregular winter visitor to Michigan, Wisconsin, Illinois, and Iowa.

There are records of their occurrence, in small numbers, in Ontario on four occasions, viz.: in the years 1854, 1866, 1871, and 1883; but in 1890 they came in numerous flocks, and some went as far as Montreal. In the States they visited Pennsylvania, New York, Vermont, New Hampshire, Massachusetts and Connecticut, States, which, with the exception of New York, they had never before been known to visit.

Some of them remained till the end of April, or beginning of May, after which they all seem to have returned to their usual habitat.

Their name was given them under the impression, which seems to have been erroneous, that they sang in the evening.

They belong to the large family of the *Fringillidæ* or Finches.

The conical shape of the beak is a distinguishing feature of this family, and this feature is more strikingly developed in the Evening Grosbeak than in any other finch of this continent, so that its beak is a very powerful instrument for cracking seeds and nipping off buds.

The European representative of the genus *Coccothraustes* is the Hawfinch (*C. vulgaris*), a bird that is often found in England. You will see from the specimen that I exhibit, that the conical bill is even more developed in this bird, than in the Evening Grosbeak.

THEIR APPEARANCE IN ONTARIO.

Mr. McIlwraith writes from Hamilton that "the Grosbeaks were first observed there on Dec. 19th, 1889. Flock after flock passed along, going

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east, till near the end of January, when for a few days none were seen. About Feb. 10th the return migration began, and was very active while it lasted ; but they were only noticed for three or four days."

Mr. Ernest E. Thompson reports that a flock of about twenty were seen at Lorne Park, fourteen miles west of Toronto, on Jannary 16th, and on January 18th Mr. Cross, and Master Charles Harvey, a son of our President, met with specimens in Rosedale, Toronto. A male bird, that Master Harvey procured then, he presented to our Museum. The white secondary quill feathers of the wing, in this specimen, are shaded with brown like those of the female.

The first time I saw any of these birds, was on January 22nd. I had gone out to Rosedale Heights with a gun, hoping to meet with some, as there had been a north-west wind on the previous day. After wandering about for some time, I heard what, at a distance, seemed like the creaking of a gate repeated over and over again. I walked in the direction of the sound, and, as I approached nearer, it increased to quite a number of quiet whistlings, and I saw, just in front of me, a flock of about fifteen Evening Grosbeaks. Their thick beaks gave them quite a parrot-like appearance as they ran about among the bushes, searching for seeds that had fallen on the ground. I followed them closely for some distance before they took any notice, and then the whole flock flew into a small tree by the roadside. I fired, and a pair of them fell. It was difficult to see the female bird as it lay on the greenish-brown herbage at the roadside, so closely did its plumage match the surrounding tints. The striking black, yellow, and white colours of the male bird were, of course, more conspicuous.

There are many birds that exhibit these striking differences in the colour of the sexes. The quiet tints of the female conceal the bird when sitting on its nest, and protecting its young, while the more striking colours of the male bird make him very conspicuous. Mr. Darwin attributes the bright tints of the male, very largely, to the preference of the females, and their continued selection of bright colored partners.

It often seems, however, to be the duty of the male bird to attract, not only the attention of the female, but also, that of any enemy that approaches too near her, and to lure away the enemy from the nest and eggs, by his attractive colours, or peculiar antics. The Scarlet Tanager, the Towhee, and Bob-o-link are, I think, examples of this.

The Grosbeaks were very numerous in the neighbourhood of the city until the end of January. There was very little snow about, and they fed largely on the ground.

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Then, for about a week, they nearly all disappeared. On the night of February 7th, snow fell heavily, and on the 8th great numbers of them appeared again in, and around the city. They now fed largely on the Mountain Ash berries, and for three or four days were almost as common in the suburban streets as the English Sparrow.

This would be, according to Mr. McIlwraith's observations, the return journey of the main body of the migrants. Most of them had left by February the 10th, the very day on which the advance guard reached Hamilton.

Some were seen at Lorne Park on February 15th, and flocks were occasionally seen near Toronto until the middle of May, but none of them, as far as I have heard, remained to breed in this district.

Specimens were taken in Montreal at the end of January, and on February 5th. This is just the time, during which, they were absent from Toronto.

THEIR APPEARANCE IN THE STATES.

In the 1890 edition of the Birds of Pennsylvania, Mr. Warren says that they first appeared in that State on December 17th, 1889, and single birds, and small flocks, were seen until the middle of April, 1890. One flock, however, of about forty, remained at Montoursville, Lycoming Co., until the beginning of May.

Early in April, says an observer, they appeared restless, and on April 30th had separated into pairs, and seemed likely to build there, but were disturbed by a gunner, and all left on May 11th.

They were first seen in New Hampshire on January 4th; in Massachusetts January 8th; but are not recorded in Connecticut until the end of February. They seem to have entered the New England States *via* the north shore of Lake Ontario, and remained in them until the end of March.

THE CAUSE OF MIGRATION.

Sir Charles Lyell, in the passages already quoted, gives two causes for their irregular migrations, viz., an unusual increase in numbers, and an unusual scarcity of food.

Our Dr. Brodie thinks that the migrations of the Pine Grosbeak are often caused by the freezing of rain on the forests where the birds usually obtain food. Everything being then coated with ice, it is difficult for them either to perch on the branches, or procure seeds, and they come south for food.

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These Pine Grosbeaks visited Toronto in great numbers while the Evening Grosbeaks were here. They were also very numerous six years ago, in February and March, 1884.

Professor Newton of England thinks that the Sand Grouse migrations to Europe were caused by great increase in numbers, and a consequent difficulty in procuring the means of existence.

The evening Grosbeaks, probably, breed in uninhabited districts, where they have no human and, perhaps, very few natural enemies. They may have so increased in numbers that their usual winter supply of food was inadequate for them, and hence the unusual extent of their migration. But whatever was the cause, they all seem to have returned to their usual haunts for the breeding season.

THEIR FOOD.

Their food was very various. In Ontario they fed on the berries of the Cedar and Mountain Ash, on apple seeds, choke cherries, haw-stones, and on the sprouted seeds of the Maple and White Ash.

They were very tame while in Toronto, often allowing themselves to be approached within a few feet, and many of them were caught alive, and kept for some time in cages. One female belonging to Mr. G. E. Atkinson is still living.

I have a mounted specimen of a male bird on the table, kindly lent by Mr. Blackburn, which shows very distinctly the whitish spot on the inner web of the two outer feathers on each side of the tail. Only a few of the males show this marking, the tail feathers being, generally, entirely black. The specimen exhibited, was taken in Toronto during the second week in February, 1890.

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THE BRESSA PRIZE.

(Translated from the Italian, and read 3rd April, 1892.)

In the year 1836, Cesare Alessandro Bressa, Doctor of Medicine, died at Mortara, Italy, leaving to the Royal Academy of Science of Turin, the means for awarding biennial prizes as follows:—

The net income of the first two years is given as a reward to that Scientist of any nation, who during the past four years has made the most remarkable and useful discovery, or produced the most celebrated work in connection with Physical and Experimental Science, Natural History, Pure and Applied Mathematics, Chemistry, Physiology and Pathology, not excluding Geology, History, Geography or Statistics.

The net income of the second two year period is given for the same services, but competition is confined to Italian Scientists.

As the principal is over 100,000 francs, the biennial prize amounts to about $2,500.

The prize for 1891-92 must be given to Italians only. That for 1893-94 will be open to the world, and the Canadian Institute will give to any of its members, all particulars which have been or may be from time to time communicated.

For their information a summary is given of a document recently received from the Academy of above mentioned learned body.

The works for which the prize is claimed, are in the first instance considered by a committee of the Academy, and at the end of 1890 the following works were by that primary judicial committee referred to a second committee for a report:

1. *Bertrand.* Calculation of Probabilities.
2. *Hæckel.* Treatise on Radiolaria, Syphonifera and Deep Sea Cornaceous Sponges.
3. *Hertz.* Notes on the Transmission of Electrical Impulses.
4. *Lie.* Theory of Transformation Groups.

As to the first, though of the highest value, the committee did not think it fulfilled the conditions of the bequest. The report on the others s as follows:—

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"E. Hæckel's work contains descriptions of the radiolaria, siphonifera and deep sea cornacuspongiæ, collected by the "Challenger" in her voyages from 1873-1876. The naturalists on the "Challenger" made large and valuable collections of the organisms living in the depths of the Ocean, and the British Government entrusted to Hæckel the study of the above groups mentioned. In 1860 he had already made known to science a number of radiolaria, and in his monograph on calcareous sponges and medusæ, had laid the basis of a new branch of biological study—comparative morphology—and had indicated the fundamental properties of protoplasm. From 1860 to 1888 he continued his studies on radiolaria. To this epoch belong his writings on the considerations which induced him to establish the kingdom of the *Protista*—intermediate between the animal and vegetable kingdoms.

"In the first treatise offered for this competition, Hæckel increased the known species of radiolaria from 810 to 4,318, but beyond its importance to systematic zoology, we must consider the very great value of the anatomical and physiological portion of the work. The second relates to siphonifera. The delicate structure and the fragility of these animals, their life in colonies and the many instances of their polymorphism, render their study extremely difficult, and Hæckel's notes have great value, not only on account of the new forms described, but also for the general theory of their organisation, embryogeny and philogeny—and the concerted work of the individuals and the colony. In the third treatise Hæckel describes systematically the corneous sponges of the deep seas, studies them histologically, and treats generally of the position of this group, and the proper classification of the porifera. In this memorandum are described the most important phenomena of the structure of hydroids and sponges. The three treatises form a work of 2,300 pages, with 200 illustrations, drawn in great part by the author. They are undoubtedly the greatest work of the four years 1887-90, in respect of zoology, and acquire still more value as being part of a vast book through which the author, studying the fundamental phenomena of life, and the development and relations of organisms, has acquired the reputation of one of the greatest naturalists who ever lived, and has inscribed his name by the side of those of Linnæus, Lamarck, Cuvier and Darwin.

"We now pass to the works of Hertz. These are to the number of nine, and on account of their volume, but an imperfect account of them can be given.

"Although the number of electrical phenomena known and studied in all their particulars is very great, our knowledge of the nature of electricity and the internal mechanism of these phenomena is very limited. The influence of a body, electrified either by a shock or a current, is exercised upon distant bodies without our knowing how this influence is transmitted across the intervening space. Faraday was particularly interested in this subject, and used certain devices for representing the condition in which electrical magnetic influence might in such a case be exercised. Maxwell, availing himself of the powerful aid of mathematics, carried the study of the theory of the causes of electrical phenomena a step farther, and proved that the luminiferous ether was the means for transmitting electrical influence, and, invading the field of hypothesis, founded the electro-magnetic theory of light, according to which all the phenomena of light are thought to be electro-magnetic in their nature. Some proofs were found to favor this theory, but they were indirect and incomplete. *Hertz* proposed to study experimentally the propagation of electric impulses, and availed himself of the extremely rapid oscillations which occur when an electric discharge takes place in certain circumstances. Suppose, for example, a conducting body

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electrified and put in connection with another not electrified, by a wire—when the wire fulfils certain conditions, the electricity, instead of distributing itself over the two bodies, and suddenly readjusting the equilibrium, rapidly oscillates from one to the other body, and does not equilibrate till after a great many such oscillations. By ingenious experimental arrangements, *Hertz* succeeded in shewing that electrical impulses, to which these oscillations give rise in surrounding space, propagate themselves with a definite velocity, and this was the first direct confirmation of the ideas of Faraday and Maxwell, that electrical activity could be transmitted between two bodies without interposing a third. He showed that the propagation of these impulses on wires and through air took place in the same way as that of light and sound. He measured the velocity of that transmission, and found in air an equal velocity to that of light. He studied the reflection of electrical vibrations on metallic reflectors, and found in this respect again, complete analogy with that of light. He showed that in wires and in the air we could have continuous waves formed by electrical vibration, as in the case of sound. He made a great prism of insulating material, and demonstrated that a ray of electrical vibration made to fall upon one of its sides, was refracted like a ray of light. He found that the index of refraction of that substance was about the same for light and electrical vibrations. All these experiments came in wonderfully to confirm the electro-magnetic theory of light, and every one perceived the great importance of the labors of Hertz, in correlating and referring to the same cause two such important parts of physics—two such large classes of phenomena. Besides this principal consequence of the experiments mentioned, Hertz has arrived at other conclusions, among which may be mentioned the proof that electrical movements, occurring within insulating bodies, produce on external bodies electro-dynamic effects, and that the ultra-violet radiations determine the discharge from two bodies of different potential, when the difference of potential without the influence of these radiations is insufficient therefor.

"The theory of transformation groups, by Prof. *Sophus Lie*, of the University of Leipzig, is a work of capital importance, in which are gathered together the original researches which science owes to *Lie*, into the internal structure of groups of transformation in general, and especially those of contact. The results of such researches apply to analysis and differential equations in mechanics, as well as to various geometrical problems. The richness and value of the theories of *Lie* have been widely recognised. Illustrious French mathematicians, such as Darboux, Poincaré, Picard, Goursat, have published works based upon them, and refer to him with the greatest admiration.

"In preceding competitions, the committee entrusted with the final investigations, have placed the names of the authors in order of merit, yet, without having wished to dictate thereby how the Academy might be pleased to vote. In the present case the committee does not feel enabled to act in that manner—they have examined three eminent works, relating to different sciences, and present the three without any distinction of their merits. Your vote will determine which best answers the desires of the founder of the prize."

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THE GREAT CENTRE; AN ASTRONOMICAL STUDY.

By J. C. Hamilton, LL.B.

(Read 6th February, 1892.)

The paper opened with a short review of the history of astronomy. With reference to the special branch of the subject, it summed up the teachings of Pythagoras, as to harmony in the movement of the spheres, and the central fire of Philolāus, around which the heavenly bodies were supposed to perform a circling dance. Farthest off were the fixed stars, then in order the five planets the moon and the earth.

The beautiful theory of the harmony of the spheres was not lost sight of by our great poet, as is seen in the famous dialogue between Lorenzo and Jessica, (Merchant of Venice, Act 5, Sc. I.)

Reference was made to the theory of the Great Centre by other poets, such as Edgar A. Poe, in "Eureka"; and Addison, calling it the "Heaven of Heavens," in No. 580 of the Spectator; Tennyson's last verse of "In Memoriam"; and Dryden's lines:

> "This place; the highest mansion of the sky
> I'll call the Palace of the Deity."

The "Mystery of the Seven Stars" was then discussed. As satellites revolve around planets and planets around suns, so the solar system moves around a grand centre. This holds good in regard to the constellations and known systems of the universe in an inconceivably magnificent extent. What that centre is may be asked. It was shown that strange reference to the Pleiades was made by Job; that the priests of Belus noted their rising and setting two thousand years before Christ, and astronomers point to this region as one of amazing majesty. The Greeks called them Pleiades and said they were the seven daughters of Atlas and Pleiône, of whom all but one, Meropé, were united to immortal gods and placed in heaven after death. Their names are Alcyoné, Meropé, Maia, Electra, Taygeta, Steropé and Celeno. The Greek name for the group has its origin ascribed sometimes to the word signifying to sail, as their rising was looked for by the sailors of the Mediterranean; but another derivation makes them the heavenly doves.

Our Mohawks have a legend as to the seven stars in which seven brothers who unfortunately fell in love with the same fair squaw, were translated to heaven on her untimely death. The Chippewas of Lake

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Superior, with less romance, called the Pleiades *Madodisson* or the sweating stones, referring to the hot stones arranged in a group in their vapour baths.

Only six Pleiades are usually seen, though as many as sixteen have been made out by keen observers without artificial aid (Mr. A. M. Clarke's article on *The Pleiades, in Nature*, April 15, 1886, Vol. 33, p. 561.) Hipparchus mentions the possibility of discovering a seventh member of the group, Ovid too, "Quae septem dici, sex tamen esse solent."

The story of the "Lost Pleiad" is immeasurably antique and cosmopolitan as a myth or a tradition. The Pleiades are included in the great constellation of the Bull.

They are with us a winter constellation. Their position is best found by following with the eye the line made by the belt of Orion northward past Aldebaran and the Hyades.

Alcyoné is of the third magnitude, but was not 1750 years ago the lucida of the collection. The leading place was first assigned to Alcyoné by Tycho Brahe in the sixteenth century. Galileo detected nearly fifty stars in the Pleiades. M. C. Wolf, in 1875, at Paris, made a chart which included stars to the fourteenth magnitude to the number of six hundred and twenty-five, contained in a rectangle $135' \times 90'$ in which Alcyoné occupies a nearly central position. By the photographic object glass, stars of the Pleiades down to the seventeenth magnitude have been deciphered, and more than one thousand four hundred have been placed on the photographic retina.

The Pleiades are immensely far off. None of them has any sensible parallax, nor are we informed of their intrinsic lustre, mutual distance or gravitating mass. Recent investigations of the structure of the Pleiades group shew a surprising miniature sidereal system, the richness and variety of which bewilder theoretical conceptions, and recall as anomalous the accumulated wonders of the Magellanic clouds. Groups are collected within the main groups, systems revolve apart, the subordination of which to the laws of a general federative union, leaves their internal liberty of movement unshackled.

The furthest of the suns forming the group are seventy-one times as distant from us as from the centre of their own system; consequently Alcyoné blazes upon them with five thousand times the brilliancy of Sirius. "It would seem," says Mr. Clark, "a star rather than a sun."

A learned Canadian, of eminent name and lineage, Mr. R. G. Halibur-

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ton, Q.C., F.R.G.S., now residing abroad, has made a study of primitive traditions as to the Pleiades. He has discovered a yearly calendar regulated by these stars. He has become known in connection with the so-called "Pleiades Year." A work published on the Continent "Die Pleiaden," has been dedicated to him as the pioneer in this interesting field of research, and Mr. Piazzi Smith, late Astronomer Royal of Scotland, borrowed largely from Mr. Haliburton in his book on the Great Pyramid.

Mr. Haliburton has long been promising to embody the result of his investigations in book shape. Failing this, I am, through correspondence and reference to his published essays, able to give some of the facts and observations. And so, without too much anticipating the promised story, which we will hail with pleasure, I will cull from the rich supply he lays before us.

In his pamphlet entitled "New Materials for the History of Man, 1863," Mr. Haliburton shows that the Festival of the Dead was, in ancient times, regulated by the Pleiades. The memory of the Deluge was by the Mexicans, the Egyptians and the Jews associated with the same time of the year—the middle of October. Among the Aztecs, as well as the Egyptians, the Deluge was commemorated at the beginning of the year of the Pleiades, that is when that constellation culminated at midnight. The Deluge and time were considered synonymous by the ancients. In Europe the last day of October and first and second of November are designated as the festivals of *All Hallowe'en*, *All Souls* and *All Saints*. They are connected with the commemorations known amongst all nations as the Festival of the Dead or the Feast of Ancestors, and this reminds us of the Voyage of Ulysses to the Gardens of Alkinoos, the abodes of the dead. . . . The Pleiades long retained their name Hesperides, Stars of the Evening, even when they had ceased to regulate the year, when their pleasant influences had been forgotten. They were also by the Latins called Vergiliæ or harbingers of the spring; and by the Hebrews *Chimah*, or the *Cluster or group of Stars*. The Pleiades gain twenty-eight days on the tropical year in every two thousand years. Hence the Pleiades that now culminate at midnight on 17th November, did so in October two thousand years ago. The Bull constellation including the Alcyonic group, bore the name Tar, Ataur and Attyr in Egypt. Hence the Latin *Taurus*. The year of the Tar and stars of Attaur, have left their impress on the very mountains of Great Britain. Many a hill is known as a Tor. Our ancestors raised the "Seven Altars" on these hills to the stars of the Tar, and to this day the pleasant influence of the Pleiades, commemorated by Job and celebrated by

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Australian savages, is still lingering in Britain under the popular traditions as to the good King Arthur. It is worthy of note that the name of this king meant in Egypt a hill, (Bunsen's Egypt, I., 465.)

The era when the Pleiades left their impress on the calendars and traditions of nations, must, says Haliburton, in *Nature*, Vol. 25. 100, be very remote, so much so that such researches are like investigations into the fossils that tell of organisms that lived in a world and breathed an atmosphere different from our own. He found a tradition on the African Gold Coast, that the Pleiades are young women, six of whom are very beautiful, but the seventh is so plain that she conceals herself from sight.

Some tribes of the Australians dance in honour of the Pleiades, because "they are good to the black fellows." The negroes too, say "these stars are good to the darkies." The natives of both North and South America regard the Pleiades as beneficent stars, and dance in their honour. M. Mädler, of Dorpât, in 1846 developed the theory that Alcyoné, the lucida of the cluster, is the centre of gravity of the solar system, the luminous hinge around which our sun and the planets move through space. The theory had been mooted by Wright in 1750, and Lucretius had some fanciful notion as to our system revolving around a common centre: Lib. 1, de rerum Natura. "The theory of Mädler, that Alcyoné, the brightest of the group is the central sun of the universe is most interesting," says Haliburton, on account of the fact that such was the actual belief of early ages. "The ancients in very remote ages undoubtedly believed that it was the centre of the universe, and that Paradise the primeval home of our race and the abode of the Deity, and of the spirits of the dead, was in the Pleiades, traces of which ideas we even find among savages."

With the Pleiades two sacred birds were connected. In Samoa there is a sacred bird called Manu-lii, the bird of the Pleiades. The Hindoos believed that Brahma came from an egg. The Greeks had similar traditions; Castor and Pollux sprang from an egg. So also Semiramis, and she was brooded over by a peliad or dove.

From Britain to Japan these stars are popularly known as the "Hen and Her Chickens," and the "Hen-Coop." In Mexico the Kingfisher was a sacred bird; so with the Greeks it was called the Halcyon, the bird of Alcyoné or Paradise; and the Halcyon days were the summer days at the end of autumn, which we should now render heavenly days. Mr. Haliburton found that among the Brahmins of Tyroloc, the name of November was *Kartica*, the month of the Pleiades. In Polynesia there was a year regulated by the rising of the Pleiades at the sunset, and their

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being visible all night long. He also found a three days' feast observed in Australia in honour of the Pleiades, and traces of the primitive Pleiades calendar he has discovered existing all over the world. These stars are apparently six in number; yet among civilized and savage races in Europe, in India, China, Japan, Africa and America this diminutive group is not merely regarded as seven stars, but what is more surprising, as "The Seven Stars," though the far brighter stars of the Great Bear might seem to deserve the title. In the Feast of Tabernacles, the Berber tribes build their temporary tents with a hole at the top, in order that the young men being instructed, may see the Pleiades passing overhead. The Jews were found to have the same custom. "We can now understand," says Haliburton, "the vestiges in Egypt of a popular belief that the Pleiades are in some way connected with the Great Pyramid, the existence of which was observed with feelings of surprise by Prof. Piazzi Smith."

Colonel Vyse is credited with noticing this phenomenon when making researches in Egypt some years since. Six of the pyramids at Gizeh have openings facing north, leading to straight passages which descend at inclinations of from 26° to 28°, the direction being parallel to the meridian. A person standing at the bottom and looking up, would have seen the Pleiades passing overhead when the Great Pyramid was built in 2170 B.C. Prof. P. Smith suggests that its seven chambers commemorated the seven Pleiades.

The Berbers of Morocco had a name for Alcyoné which was given because they said Paradise is there, and the Pleiades are the centre of all things. In Sahara are ancient mosques and temples where the year is still regulated thus, there being a tube from the top of the building, small above and larger below, through which the southing of these stars is observed.

"I am persuaded," says Haliburton, "that the day is coming when the learned will admit that these stars are the 'Central Sun' of the religious calendars, myths, traditions and symbolism of early ages, an era however so marvellously remote that investigations respecting it bear the same relation to the study of anthropology and to the science of religion, that paleontology does to natural history."

The essayist said in concluding: We have now reached as far in our enquiry as time will permit. It is admitted that it is still one of theory and speculation in advance of demonstrative and practical astronomy. Among objections to the selection of Alcyoné as Stellar Queen, may be that she is not of first astronomical rank, but of the third magnitude, while all the

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others of the group are of lesser apparent proportions. Some may suggest the great Aldebaran or Sirius the immense central sun, or perhaps Arcturus, with a diameter exceeding ninety millions of miles. Could he be placed between our orb and the sun, he would fill nearly all the intervening space. Yet as we have seen, the old Chaldeans, the Egyptians, the Berbers of Morocco, savage myths and folk lore, Job and the poets point to the same great centre. The inference is boldly drawn that a spot so comparatively small and insignificant as our planet, or even the solar system compressed into one great mass, cannot with reason be regarded as the future place of bliss. If in that are to be gathered the mighty intelligences and the innumerable redeemed of all ages, the argument is advanced that Alcyoné, the great lucida of the group, the physical centre of the universe, may be also its spiritual and divine centre.

This, as we have seen, has some weight with men of science, but is mainly found as yet in poetic musings. Such may be included in the Laureate's conception of

> "One far off divine event,
> To which the whole creation moves."

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THE ABENAKIS OF SAINT JOHN RIVER.

By Edward Jack.

(Read 23rd January, 1892.)

When Champlain landed at the mouth of the St. John River in the year 1604, he found a number of Indians living there. In answer to his inquiries as to what they called this river, he received this reply, Ouigoudi; now the name of St. John River in Abenaki as well as in Micmac is Wallostook, the word Ouigoudi meaning camping ground. Singularly enough this error has been continued down to our day, and one of the ferry boats which cross the harbor of St. John is called the Ouangondy, a corruption of the word Ouigoudi, arising from a misprint in a history of Nova Scotia in which the word was thus printed. Had the parties who thus misnamed this steamboat asked the Aborigines who were camped near the city, what they called the St. John, they would have received a correct answer. Lescarbot in his "Histoire de la Nouvelle France" says, that when in 1606 he came to the River St. John, "being in the town of Ouigoudi, for thus I can properly call an enclosed place full of people, he saw in a great thicket about eighty savages."

Just opposite the city of Fredericton also, there is a collection of mean huts in which some of the Abenakis of the St. John reside, this they to-day call Ouigoudi. At the time of Champlain's arrival, the banks of the St. John were inhabited by the Abenakis, a branch of the great Algonquin family; their descendants tell me that their ancestors came from the west, and that before the white men arrived among them they worshipped the sun and moon.

The Great Spirit was called by them Ketsi Niouaskoo, and the Evil Spirit Matsi Niouaskoo. One of my Indian friends said to me he had read about the latter in his catechism, and that he is the devil.

It is stated in the relations of the Jesuits that in the year 1642 some Algonquins who were attending a religious celebration at Montreal, having ascended the mountain, one of them pointing to the hills situated to the south and east, said to the French, that the Hurons who then were their enemies, had driven their ancestors from this country, some of whom had fled to the country where the Abenakis now live. The first

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missionary to visit the St. John was Pierre Biard, of the Society of Jesus, who was sent to Acadia in 1610-11, through the exertions of the Duchess of Guercheville and other ladies of the French Court. Biard in a letter to Claude Aquavia says: "I beseech you by the merits of Jesus Christ to remember us and these most solitary countries, assuredly we are sowing in great poverty and tears, may the Lord deign some day to grant us a harvest of joy." In another: "Our days and nights flow sadly along, what consoles us is the hope that God who reanimates the downcast heart will shortly come in his mercy and assist us in our wretchedness."

In 1611 Biard ascended the St. John in company with Biancourt, and celebrated Mass on an island six leagues from its mouth. This island is probably one of those which are situated not far from what is now called Oak Point. According to Abbe J. A. Maurault, the Abenakis (men of the east) formerly inhabited what are now Maine, New Hampshire and New Brunswick, extending even as far as the shores of Nova Scotia. This tribe formerly consisted, according to him, of several divisions. He enumerates the following as being the chief:

1st. The Kanibesinnoaks, those who live near the lakes; these were called Canibas by the French.

2nd. The Patsuikets, those of the Land of Fraud, because there were among them many New England savages, who according to the Abenakis had established themselves by fraud on the Merrimac River, and extended themselves as far as the Connecticut; they were only one division of the Sokokis.

3rd. The Sokowakiakis, men of the south; these resided in the south-west part of Maine and in New Hampshire; the French called them Sokokis.

4th. The Nurhantsuaks, those who travel by water, because they resided on the upper part of the Kennebec, and on the shores of the lakes.

5th. The Pentagoets, who were also called Penaouabskets, those of the stony country; these resided on the Penobscot, where the shores were in many places covered by stone.

6th. The Etemankiaks, those of the country of snow-shoe hides; these resided on the River St. Croix and on the St. John. The Abenakis called this territory Etemandi, because there were here great quantities of moose and caribou, from whose hides excellent snowshoes were made.

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7th. The Oualastegouiaks, these resided on the River St. John; later they were called the Mouskouasoaks, Muskrats, because they lived like these animals on the banks of the river. The remains of this tribe and those of the Etchemins are now called Melecites. These Indians now occupy the greater part of New Brunswick, and it is with them that the writer has to do at present.

Abbe Maurault gives the meaning of the word Malouidit as being those of Malo, which he says was the name given to the Metis among them, because the greater part of their fathers came from St. Malo. He also says that the Abenakis called the grain which was introduced among them by the French, Maloumenal, Malo grain. The early connection of the Abenakis with the English is shown by their word for king which is Kinzames, this evidently comes from that of King James, who ruled England from 1603-1625. This or a similar word is used for the name of Queen Victoria, as any one may learn by going into one of the Abenakis school houses, and asking the dusky little scholars who are very tractable and who excel much in writing. The chief settlement of the Abenakis on the St. John was at Augh-Pa-Hac, head of tide six miles above Fredericton, at the point where the still water meets the rapid. John Gyles, who was a prisoner among the Abenakis from 1689 to 1698, was taken to this place. About the first of July 1881, the writer being desirous of visiting the vicinity of Augh-Pa-Hac, all traces of which have completely disappeared, engaged one of the most intelligent of the Abenakis to pole him to the place in his bark canoe. Noticing a good chance to land and have our dinner, we went ashore near a cold spring; when the meal was finished, the Abenaki took out his pipe and enjoyed a good smoke. This made him more communicative than usual, for they are not a people who are fond of much talking. He said that "when the first white man came to St. Anne's Point just above Fredericton, he found an Indian sitting on a bench in front of his wigwam; the Indian motioned to the white man to be seated, and as the latter was taking his place on the bench the former out of respect moved a little away, then the white man moved nearer, until the poor Indian was pushed entirely from off the seat." I asked him why his people liked the French better than the English; in reply he said that "When the English took Quebec they promised to treat us Indians as well as the French did, but they never have and never will; the French lived among us, learned our language and gave us religion, they were just like ourselves; this is why we thought so much of them." After ascending the river for a mile or two more we came opposite the foot of what is now called Hart's Island; this the Abenaki said was formerly called Old Town by the Indians.

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Here it was that the Abenakis lived in summer; their wigwams placed around the island formed a sort of stockade, the centre being reserved as a place for dancing. The Mohawks, he said, had often attempted the destruction of the Indians of the St. John, and once in particular they would have been successful but for an aged squaw, who was so wise that all the tribe listened to her opinions with respect. "One evening long before the whites had come among us," said my Indian whose words I give as nearly as possible, "this woman with her grey hair falling down over her shoulders, rushed into the centre of the encampment calling out "there is trouble, there is trouble;" she was soon surrounded by the anxious braves who wanted to know what she meant. Look at Wi-Jo-Sis, (Curry's Mountain) a hill on the opposite side of the St. John, back of it a great party of Mohawks are hidden, and they are only waiting for night to attack and kill you all, if you are not ready to meet them; a council was at once called and a course of action determined upon. Some old Indians call this mountain We-Jo-Sis Po-Te-Wis, or Little Council Mountain, because in old times the Mohawk braves always went there first to hold a council before attempting to attack the Abenakis on Nkarne-Odan (Hart's Island), they would stop on this mountain for days watching the Abenakis. In order to deceive the Mohawks, the Melicites concluded to have a big dance; while this was going on the braves one by one slipped out, leaving none but the old men and women to keep it up. Before leaving however, they had agreed upon a particular sign by which they could distinguish each other in the dark as they were crawling through the long grass, or among the thick bushes which surrrounded the island, and he who did not respond to this sign was to be dispatched immediately and his bleeding head to be thrown among the dancers. The Mohawks, as night advanced, stole along noiselessly to the Melicite village, but wile had been met with wile, and before day dawned many a Mohawk's head had been thrown among the dancers, with the whispered command, dance harder, dance harder. All of the Mohawk braves were slain, the others were killed as easily as you would cut a chicken's head off, or knock down a lamb. Some three or four had been reserved however, whose noses and ears were cut off and they were allowed to return home in order to show the Mohawks how they would be treated should they try the like again." As my friend had again thrown off all reserve and become talkative, I seized upon the occasion to note down what he said. I had been speaking about the food of the Aborigines. "You want to know what vegetables we used before the white man came among us; we will go over to the island, and I will show you the Indian potatoe; when I was a little papoose I remember coming here with my mother for them, I picked them up as she dug them with a hoe. We will find the

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Indian potatoes here," said my friend, as he pushed his canoe ashore, landing at a spot shaded by alders, where he began to dig with his hands, and soon brought to light what seemed to be a lot of very small potatoes strung together at equal distances ; we wanted to see the plant of which they were the roots. After a good deal of looking among the tops of the alders, the Melicite brought us some leaves of the common bind weed, which had climbed up among them ; it is of the same family I believe as the sweet potatoe. "There is another root," said the Melicite, "which our fathers used, we call it Indian rice, I often use it, it is very white and nice and is excellent in soup." From the description which he gave of the plant it must have been the yellow lily, which grows in rich damp ground on the shores of the St. John. "We use, in medicine, among other plants the root of the sweet flag (said the Indian). Long ago a great sickness fell upon the Abenakis, and many of their women and children died. One night there appeared to one of the braves a strange figure, as of a man all covered with joints and bars, I am, said he, Ke-Whis-Wask, muskrat root, (the Indian name for the sweet flag), and can heal you all ; dig me up, steep me in water and drink me, and I will cure you. After saying this he disappeared, and the next morning, the brave doing as he was told, all of the sick on drinking it, recovered." Leaving the island where we were shown the Indian potatoe, as the Melicite poled his canoe towards Savage Island, the water became quicker, there, said he, pointing to the west side of the St. John River, is Augh-Pa-Hack, and here once stood our church and village, the English destroyed them long ago. Pointing towards Savage Island he continued, "There was in former times on this island a race course, which extended all around it ; here after ball playing the young Indians tried their speed, I have seen when a boy, marks of this race course in the sod. In old times the young Indians were carefully trained, they were kept by themselves and everything was done to make them strong and supple. The Indian boys were every day practised in the use of the bow, by some old man whose duty it was, so that at fifteen years of age they became good hunters, the old teacher having taught them how to make traps and catch game of various kinds. The young Abenaki was not allowed to choose his own wife, the parents did this ; when they saw a young squaw who was considered a suitable match for their son, they sent bracelets and a piece of wampum to the girl. Her relatives then met and consulted over the matter, and if the match was approved of the presents were kept, if not, they were returned." (The old Abenaki who gave me this information, said to the writer), "My old woman and I never spoke to each other before we were married, my father and step-mother made the

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bargain. I think young people are getting too saucy now, for they must do a great deal of talking before they can get married."

"Indian corn," said my Abenaki friend, "was once grown to a great extent on Savage Island; when the grain was ripe the corn on the cob was hung up to dry in the wigwams, and when dry enough was removed from the cob and placed in baskets, which were set away for winter use; when used it was sometimes boiled whole, and at others cracked by hand between two stones, after it had been cracked it was put in a pot and boiled with sturgeon or salmon roes until it was very soft, this food was eaten out of wooden bowls with wooden spoons. After the corn was cracked it was called Nsabon. Before making this boiled food, the hulls had been removed by boiling the corn in lye, after which it was washed in pure water. The boiled food was called Qunosk-ke-te-ga-ne Nsabon, in English, boiled corn pudding. Augh-Pa-Hac was a famous place for salmon and sturgeon in old times, they were caught in July, the roes were saved and hung up in the sun to dry, they were afterwards smoked. When dry enough they were rubbed by hand so that the eggs separated, the product was then put in birch bark boxes and hung up in the wigwam." Cadillac, the founder of Detroit, mentions that when ascending the St. John, he found the Abenakis of Medoctet, or Meductic, cultivating pumpkins, corn and beans. Medoctet was a famous Indian encampment, it was situated on the west side of the St. John on a rich flat, a short distance above the mouth of Eel River, and it was this river that the Abenakis ascended when they made their raids on Massachusetts. There was another Abenaki village on the Saint John River, just below Edmundston, the northern terminus of the eastern division of the Canadian Pacific Railway. The Recollets had a mission at Augh-Pa-Hac in 1620, and in 1696, Father Simon, the missionary at that place, sent down forty of his Neophytes to aid De Villebon in his defence of Fort Naxoat, situated at the mouth of the River Nashwaak, and nearly opposite Fredericton, at the time when that fort was attacked by the New Englanders, who were always ready to harry and annoy either French or Indians. This disposition was no doubt the cause of the Abenaki emigration to the province of Quebec. The first that we hear of them in that province was in the year 1637, when some of them came to Quebec to buy beaver skins. Evincing an intention of ascending the St. Lawrence still further, they were forbidden by a Montagnais chief, but notwithstanding this they went as far as Three Rivers, in order to trade with the Algonquins. The Montagnais chief complained against them to the governor M. De Montmagny, representing to him that these Indians had come to Canada in order to buy beaver skins to carry to the English. The wigwams of the Abenakis were visited, and the articles

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which they had received in exchange for their wampum were confiscated, and they were enjoined immediately to return to their country. In 1640 an Englishman accompanied by twenty Abenakis arrived in Canada; the Governor on being informed of this, forbade him from visiting Quebec. As the rivers by which he had ascended to the St. Lawrence were too low to return, he was taken to Tadousac, and put on board of a vessel which was about sailing for Europe. Some time after the Abenakis were returned to their own country. At this time they were looked upon as strangers, and the favour of residing in Canada was granted only to a few who remained at Sillery, in order to attend religious services there. Charlevoix, in his History of New France, says that the French could not have maintained themselves in Canada without the assistance of the Abenakis, that in Acadia they formed their principal bulwark, and constituted an impassable barrier between New England and the French Colony, and that they were at length placed in Canada on the Rivers St. Francis and Becancourt, in order to create a barrier against the Iroquois, and to avert their irruptions. The chief immigration of Abenakis to the St. Lawrence took place not far from 1680; no doubt the causes were various. In the first place they and the French were co-religionists, and the latter were very glad to have their assistance as warriors. We hear of them in 1695 capturing a party of Iroquois on an island in Lake Champlain. After the victory they named this island Atepsec, the island of the head, because the Iroquois when surprised by them, had been gorging themselves on a bull's head, which they had roasted. Though firm friends of the French, the Abenakis could speak plainly to them when they deemed it necessary. Thus we find that in 1717 when an embassy was sent by some of them in Acadia to wait on the Marquis De Vaudreuil in order to ascertain whether he would help them against the English in case of a rupture, "What assistance will you give us, father," they asked; "my children," said Vaudreuil, "I will send you secretly some hatchets, and some powder and lead." "Is this the way then," the Indians retorted, "that a father aids his children, and was it thus that we assisted you? A father," they added, "when he sees his son engaged with an enemy stronger than he is, comes forward, extricates him, and tells the enemy that it is with him that he has to do." "Well, replied De Vaudreuil," "I will engage the other Indian tribes to furnish you with aid;" at these words the Abenakis retorted with an ironical laugh, and said, "know that we who inhabit this vast Continent will whensoever we please, so long as we exist, unite to expel all foreigners from it, be they who they may." This declamation surprised the Governor, who to pacify them said, that rather than abandon them to the English, he would march at their head.

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THE TRADITIONS OF THE ABENAKIS.

The Indians of the St. Joh nRiver have a vast number of traditions; some of these agree exactly with those which I have heard from the Chippeways on the head of Lake Superior, and a comparison between those common to the two tribes would form a most interesting study. Among uneducated people oral traditions form their history and literature, and hence it is that one hardly meets with an old Abenaki who has not a vast number of stories of various kinds relative to his people, as to those mysterious and shadowy beings which his ancestors taught him were to be found in the forests or around the lakes; a favorite situation for the dwelling place of these spirits was the top of some lofty mountain, the more inaccessible the better it suited the purpose. The Indian who in former years wandered solitary through the vast forests among which the St. John winds in its course to the sea, was forced to commune with his own mind; if the deep voiced thunder bellowed or the lightnings flashed, the more easily impressed among them heard in this the voice of the Great Spirit. He may have said on his return from his hunt that the Great Spirit had spoken to him, adding to what he had heard the creations of his own heated imagination; the story being retold by the listener was added to by him, and thus by a series of increments these traditions have been built up to a perfect story, just as the larger crystal is built up on and around its primitive molecule. In a short and imperfect sketch such as the present one is, I give only a few of these traditions, and they are given in a very disconnected manner, but as nearly as I can in the language of the narrators as taken down from their own lips. The most prominent character in all the traditions of the Abenakis of the St. John is Glooscap. They tell me that the traditions respecting Glooscap they received from the Micmacs, and that the language which the Turtle, Glooscap's uncle, spoke was Mic-mac. Glooscap was a twin, his brother burst his way out of his mother's side, after they had grown up his brother became jealous of Glooscap and determined to kill him. In conversation with him one day, Glooscap's brother casually asked him what would kill him? Glooscap, knowing his brother's evil thoughts, did not tell him the truth, but said to him that a blow from the down which forms the head of the bullrush would do it; and "what would kill you?" said he to his brother. "A bird's down," was the reply. As soon as the younger brother could get a bullrush he picked off some of the down and threw a handful at Glooscap's head, it knocked him over and he remained stunned for a long time. When he came to himself and knowing that his brother was very dangerous and wanted to do all the evil he could, he determined to get rid of him, which he did by

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striking him with some bird's feathers. One of the most intelligent of the Melicites in conversation with me said, "there must be something in Glooscap, for have I not seen his pack where he left it, which is now turned to stone? This is on the seashore below St. John. I have seen too the entrails of the moose which he killed near Machias; these are all twisted and are of white rock; then there is his head on the banks of the St. John." One evening I asked this man to tell me all about the famous Glooscap, and committed his words to writing, they were as follows:— "Glooscap is a spirit, he does not grow old, he lives at the south end of the world, the wild geese were his watchers, and the loon and wolf his dogs, there were seven Indians who once went to see him in order to get their wishes granted; they found him living with his grandmother, whose youth he had renewed four times. When these seven men came to where Glooscap was, and it had taken them seven years to reach him, one of them said to him, I want long life; telling him to come out of the wigwam, Glooscap took him to a spot near by, saying, stand there, you will get your wish, and then turned him into a cedar tree, all limbs and fit for no use, so that no one would ever cut him down. Glooscap is constantly making arrow heads preparing for a general war, he always looks young; where he is there is a medicine man who is blind, he lies on one side for seven years, he is then turned over and where he lay, herbs, good for medicine, were found growing. The benefits of these were explained by him. Glooscap asked this medicine man what he would do in case of a general war, he said that when all were dead he would open his eyes. When Glooscap's visitors were ready to leave, he pointed to the remainder of them a way of return which led them home in four days. Glooscap was very good, anything which was big and dangerous he reduced in size. One day he met the squirrel then an animal of great size, and asked him what he would do if he met a man; there was a stump close by, at this the squirrel rushed and tore it down with his teeth and claws, then Glooscap put his hand on the squirrel's back three times, and reduced him to his present size. In former years Glooscap had a camp as large as a big city, in this were all kinds of animals, even to the toad, and such power had he over them that he made them believe that they were human beings. The eagle (kulloo) was there, whose wife was the caribou, he had a son and daughter by the caribou, this daughter married the Turtle, who was Glooscap's uncle. Soon after this, Glooscap told his uncle to make a feast; "how can I do it?" said the Turtle. "You ought to be old enough to know yourself" said Glooscap, telling him at the same time to go down to a long point which ran out into the sea and wait until a whale came along, this he was to catch and carry to his father-in-law's house; soon one came swimming by, this he caught and towed ashore, putting it on

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his back he carried it to the place named, but thinking that he could carry it further, had only advanced a little when he found the weight of the whale pressing so heavily upon him that he could not move. The other animals in terror came to Glooscap and told him what had happened, he said to them not to mind but to cut up the whale, this they did. Then the Turtle came out stretching his legs and saying that he was tired and sleepy, the great load which he had carried made the Turtle very proud, so that he began to hold councils on his own account with the other animals; at one of these he proposed that Glooscap should be killed and he become their ruler. All the animals even to the toad took part in these councils. Glooscap in order to defeat the tricks of the Turtle turned himself into an old squaw and made his way to the council house. At the door he found another squaw in the shape of a porcupine, she was sitting on one side while a toad sat on the other. Glooscap said to the porcupine what does all this mean? it is none of your business was the reply, so Glooscap took the porcupine's nose off between his fingers, and turning in a rage to the toad and making the same inquiry and receiving the same reply treated it in the same manner. As soon as Glooscap was gone the porcupine said to the toad, where is your nose? at this the toad looking at the porcupine said, where is yours? they were then satisfied that it was Glooscap who had been talking with them. After the council was over the Turtle said in a friendly manner to Glooscap, we will sleep together to night. After they had gone to bed and when the Turtle thought that Glooscap was asleep he attempted to stab him, but only wounded himself. At this Glooscap jumped up saying, let me have a cut at him, and wounded the Turtle badly; after this the animals all got fighting with one another, the Turtle quarreling with them all. One of them at last said to Glooscap, the Turtle will kill us all; then help yourselves by giving him a kick in the breast whenever he becomes troublesome. They did so and he appeared as one stunned. After this Glooscap called all the animals to him and transformed them to men and women. The wolf ran off and the loon flew away, both sorry enough to leave their master. When the Turtle came to his senses, seeing no one, he said I will return to my natural life, and retreating to the water he has remained there ever since."

The Melicites have many legends regarding Glooscap. There is a place about half a mile below what is known on the St. John River as Boar's Head; here they point out what appears to them to be the form of a man's head; this they say is Glooscap's image in the rocks, and they note this as the place where he first came to the St. John on his way down to kill the great beaver who had built a dam at the falls close to the city of St. John, where the suspension bridge now

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crosses the river. They say that after breaking down this dam, Glooscap drove the great beaver which had constructed it, far up the river. The Tobique Indians point out some ledges which are known as the Tobique rocks, as being part of the stones which Glooscap pelted this beaver with; they also say that he subsequently took refuge in Temiscouata Lake, and that the high hill on its shores opposite the mouth of the Cabano is the house which he built after having been driven up the river from the mouth of the St. John. The Abenakis call the rocks between which the river passes into the harbor of St. John, Gtchi-quaabeet-a-wi-cup-a-hegan, which means, great beaver's dam. Within the memory of the writer, the Abenakis when passing Glooscap's Head, before mentioned, on their way out to sea, would throw figs of tobacco from their canoes into the river as votive offerings to Glooscap, in order that he might vouchsafe to them a pleasant voyage and grant them a safe return. Denny, who held extensive rights in Acadia about the middle of the 17th century, mentions a remarkable tree which was floating around below the falls at the mouth of the Saint John, and which had been there for a very long time; this he says, "the Abenakis called the Manitou, that is to say the devil, the homage which they formerly rendered to it was one or two beaver or other skins, which they fastened to it with an arrow head, made of moose bones, which they sharpened by means of stones. Afterward, when they were passing through this place and their Manitou did not make his appearance, they held it as an evil omen, saying that he was angry with them. Since the French have been in these parts and have furnished them with iron arrow heads they use no others, and the poor Manitou has his head so covered with them that one can hardly stick a pin in it. I have seen it, and M. De La Tour's men who were with him, and afterwards with me, have assured me that they once fastened ropes to this tree, and that with a ten oared boat rowing with all of their strength and with the current, they could not drag it out of the hole."

There are many other traditions among these people, respecting "Lox," "Micumwes," "Kulloo," and many other creatures of their imaginations, which may form the subject of a future article.

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CELTIC PROSODY.

BY NEIL MACNISH, B.D., LL.D.

(*Read April 16th, 1892.*)

Though Celtic grammarians, such as O'Donovan in his excellent Irish Grammar, have devoted a section or chapter to the versification of the language with which they are dealing, it is very much to be regretted that, so far as I know, no separate or convenient or exhaustive book or treatise on Celtic Prosody has hitherto appeared. The Celts are *serius docti* in more respects than one. As so much praiseworthy attention has been directed in recent years to Celtic Literature, and as several Celtic Chairs have been founded, it is to be hoped that some Celtic professor, who can command sufficient leisure, will prepare, for the benefit of all lovers of Celtic lore, a Celtic Classical Dictionary, wherein will be lucidly arranged and detailed all that can be gathered from the ancient poetry of Scotland and Ireland and Man, and from the annals of Wales and Cornwall and Armorica, respecting those heroes whose names occur in the more ancient Celtic poems as well as respecting the places and customs of which frequent mention is made in those poems. It is to be fondly hoped that among our Celtic scholars there will soon appear a Lempriere, or a William Smith, who will prepare a Classical Dictionary of Celtic Biography, Mythology and Geography; and also that a Hermann, or a Bentley, or a Ramsay, will speedily appear who will prepare, for the benefit of Celtic scholars and all lovers of Celtic poetry, a full and lucid treatise on Celtic prosody. To the construction of Celtic poetry Zeuss has devoted a *Caput Alterum*, in which he exhibits his well-known learning and thorough acquaintance with even the oldest and most obscure fragments of Celtic poetry. He writes strongly in praise of Celtic prosody, for he thus terminates his examination of it: "By the oldest as well as the most recent examples that have been adduced, it appears that the form of Celtic poetry is more adorned than the poetic form of any nation, and that the ornamentation is greater in the older poems themselves than in the more recent. In consequence of that greater adornment it has doubtless come to pass, that even from those times at which the Roman Empire was rushing to destruction, the Celtic form, at first in its entirety, and subsequently in part, was taken over not only into the Latin poems but also into the poems of other languages and remained in them." Matthew Arnold whose fame as a literary critic is great, has these warm

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words in praise of Celtic poetry: "The Celt's quick feeling for what is noble and distinguished gives his poetry style, his indomitable personality gave it pride and passion, his sensibility and nervous exultation gave it a better gift still, the gift of rendering with wonderful felicity the magical influence of nature. Rhyme itself, all the weighty evidence tends to show, comes into our poetry from the Celts." The Rev. Thomas Price, whose bardic name was Carnhuanawc, says of Aneurin one of the poets of his own country—Wales, "that English poetry was greatly indebted to him." Mr. Price further asserts not only that the admirers of poetry are under obligation to the ancient British bards, but that much of the refinement of civilized life is more intimately connected with the traditions and history preserved by them than may at first be apparent."*

It is certainly very gratifying to have the commendations of scholars of the erudition and critical ability of Zeuss, Arnold and Price, in favour of the value which attaches to Celtic versification in itself and in the peculiar characteristics of it, apart altogether from the claims which it has on the attentive study of the Celtic scholar. It is a mere truism to state that unlike Greek and Latin poetry where scansion depends upon the quantity of the syllable or syllables that form a word, scansion is regulated in the Celtic language by accent and not by quantity, by the stress of the voice and not by the length or shortness of the syllable or word. Such feet as the Iambic, and Trochee and Dactyl are common to Greek and Latin and to the Celtic languages. There must be some correspondence between those feet and the natural manner in which the human heart expresses its thoughts and feelings. Grote contends that "great as the power of thought afterwards became among the Greeks, their power of expression was still greater. In the former, other nations have built upon their foundations and surpassed them, in the latter, they still remain unrivalled." Horace expressed the truth very distinctly, when in reference to the influence which Greek poetry and Greek versification had on the poetry of his own nation, he wrote:

Graecia capta ferum victorem cepit et artes
Intulit agresti Latio.

In his *Treatise on Poetry*, Aristotle says that the Iambic metre was so named, because it was the measure in which people used to satirize each other. The Iambic is of all metres, he contends, the most colloquial as appears from the fact that our common conversation frequently falls into Iambic verse. Müller in his Literature of Greece thus writes (vol. I., p. 181): "The Iambic by proceeding from the short to the long syllable

* Price's Literary Remains, Vol. I, p. 107.

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acquires a tone of strength and appears peculiarly adapted to impetuous diction and bold invectives, while the Trochee which falls from the long to the short has a feeble character. Its light tripping movement appears peculiarly suited to dancing songs, and hence besides the name of *Trochaeus*, the runner, it also obtained the name of *Choreius*, the dancer."

Zeuss correctly observes, that from the Greek and Latin nations whose poems are contained in a metre either by a settled calculation or by an order of long or short syllables, other nations belonging to the Indo-European family such as the Germans and Celts differ, inasmuch as all their poetry is founded on the agreement of sounds as well in the first as in the last syllable of words. Some races belonging to the Indo-European family, employ alliteration, and have two and three words in the same verse—words that begin with the same consonant or vowel. Other races have followed the agreement of sounds not only in the beginning but also in the middle and end of words. These peculiarities obtain in the case of the ancient Celtic poems. Davies in his *Examination of the Claims of Ossian* (p. 199) avers, that if we may judge of their verse by the oldest specimens which can be produced by their descendants in Ireland, Scotland, Wales and Cornwall, the Celts carried their art no farther than to adjust the number and cadence of syllables in each line, to add the embellishment of strong and impressive alliteration and to connect their verses with final rhymes which were sometimes continued without variation for several lines together. Davies goes on to say, that to assist the memory nothing could have been more conducive than the strong alliterations and long continued rhymes which we find in the Old Welsh Bards. The very sound of one word suggested the succeeding, and one line gave the echo of another. It must have been for the same purpose of assisting the memory, that these Bards frequently began several periods with the same phrase, and several successive lines with the same letter. Upon the whole it appears that the mechanical correspondence of articulate sounds, however differently understood, is the great principle of Celtic verse in general, and that the obvious correspondence of sounds naturally similar was attended to, before the Bards thought of that which is more complex and artificial." In his Introduction to his *Beauties of Gaelic Poetry*, Mackenzie correctly contends "that though much of Gaelic poetry might be scanned, a great deal of it cannot be properly subjected to the classical test by the most ingenious, and yet a Celtic ear will tell that it is good. The rules for scanning by which Latin verses are governed, are alien to the Gaelic, which certainly does not owe the art of poetry to the Romans. The concord does not always depend on the coincidence of final words, but rests on some radical vowel in corresponding words ; and these not terminal alone, but recurring in several

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places throughout the verse." Stephen, in his Literature of the Kymry (p. 480) properly observes "that the works of the Cambrian Bards should not be judged by the critical principles which now prevail. Those Bards, according to an old authority, preferred, beyond all rhetorical ornaments, the use of alliteration and that kind more especially which repeats the first letters or syllables of words. They made so much of this ornament in every finished discourse that they thought nothing elegantly spoken without it." Alliteration, therefore, is one of the peculiarities of Celtic poetry. The writer of an article on *Alliteration*, in the Encyclopædia Britannica, remarks "that as Milton defines rhyme to be the jingling sound of like endings, so alliteration is the jingle of like beginnings." Churchill describes himself as one who often, but without success, had prayed

"For apt alliteration's artful aid."

Coleridge furnishes a good example of alliteration when he says,

"The fair breeze blew, the white foam flew,
The furrows followed free,
We were the first that ever burst
Into that silent sea."

The Welsh poet Llywarch ab Llywelyn furnishes many beautiful examples of alliteration, *e.g.*:

Teyrnllu, teyrnet teyrnllaw teyrnllin
Teyrnllyw teyrnas ternyse torment.

The incitement to valour which Ullin gives to Gaul in the fourth Book of Fingal, affords a good illustration of the manner in which Ossian practised alliteration, *e.g.*:

Lamh threun 's gach cas cridh 'ard nach geill,
Mar thorunn biodh do lamh, a laoich,
Do dhearg—shuil mar chaoir a' d' cheann,
Mar charragh cruaidh do chridh a' d' thaobh.

In Duncan Ban Mac Intyre's Beinn Dorain, alliteration appears to fine advantage, *e.g.*:

Gu stobanach, stacanach,
Slocanach, laganach,
Cnocanach, crapanach,
Caiteanach, romach,
Pasganach, badanach
Bachlagach, boidheach.

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In his Oran Ghlinn-Urchaidh this excellent specimen of alliteration occurs:

Cinnidh arbhar craobhach ann
Cho caoin gheal ris a' ghruth,
Gu reachdmhor biadhmhor, brioghmhor,
Trom, torrach, liontach, tiugh.

In the first verse of that extract *cinnidh* and *craobhach* begin with the same letter, *c*; *arbhar* and *ann* begin with the same vowel, *a*. In the second verse the initial *c* of *cinnidh* and *craobhach* in the first verse occurs in *cho* and *caoin*; *gheal* and *ghruth* begin with the same letter or letters *gh*. In the third verse the two last words begin with *b*, and the three last words end in the same syllable *mhor*. In the last verse *trom, torrach, tiugh* begin with the same letter. *Ach* forms the termination of *torrach* and *liontach*. In a section which he has entitled *Consonantia Latina*, Zeuss shows how the peculiarities of Celtic poetry found their way into Latin poetry, and influenced it to an extent of which many Celts have no adequate knowledge. St. Ambrose, Bishop of Milan, composed hymns in Iambics into which he introduced the concord or correspondence (consonantia) which obtains in the ancient Celtic poetry. A variety of vowels that agree among themselves is allowable. The demands of correspondence are satisfied by such terminations as *us*, *is*, *es*, *as*, and *im*, *am*, *em*.

Lucan in the opening of his Pharsalia has alliteration, and concord, *e.g.*:

Bella per Emathios plus quam civilia campos
Iusque datum sceleri canimus populumque potentem.

In the first verse which has been cited, the last two words begin with *c*, and the third, fourth and last words have correspondence, while the same thing obtains in the case of *Bella* and *civilia*. In the second verse, the first two letters in *populum* and *potentem* are identical. There is a correspondence between the *que* of *Iusque*, the *i* of *sceleri*, and the *que* of *populumque*, and between the *um* of *datum* and *em* in *potentem*. St. Ambrose composed his hymns in Iambic Tetrameters. While he is faithful to the classical requirements of his metre, he introduces the correspondence which he found in Celtic poetry, *e. g.*:

Somno refectis artubus spreto cubili surgimus
Nobis pater canentibus adesse te deposcimus.

Not only is alliteration present in these verses, the two last syllables of both verses terminate in the same manner, and there is a correspondence between the last syllable of the first Hemistich in each verse, *i. e.*, between

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us in *artubus* and *us* in *canentibus*. Many scholars who are conversant with the writings of St. Augustine and with the very important contribution which he made to Patristic Theology, are in all likelihood not aware that he virtually effected a revolution in Latin poetry. Of his *Psalmus Abecedarius*, Zeuss affirms that, as if it were to open a new country and to announce a new age, it presents a novel form of poetry, inasmuch as in it metre and every calculation of tune are neglected and attention is paid to nothing save the settled number of syllables along with correspondence. Such are the circumstances which constitute the form of Celtic poetry, *e. g.*:

Bonos in vasa miserunt, reliquos malos in mare.

Here there is a manifest departure from the laws of Latin scansion, while the peculiarites of Celtic poetry are easily discernible. *Miserunt malos mare* begin with the same consonant, *bonos reliquos malos*, end in *os*. The last syllable of the *Psalmus Abecedarius* invariably ends in *e*. Secundinus, a relative of St. Patrick, adopted the model which was furnished by the Psalm of Augustine, and composed very many Latin verses in the same manner, *e. g.*:

Benchuir, bona, regula, recta atque divina,
Stricta, sancta, sedula, summa, justa ac mira.

In the first verse that has been cited, the first two words begin with the same letter ; the third and fourth words also begin with the same letter, and the second, third, fourth and sixth words terminate in *a*. The first four words of the second verse begin with *s*. Those words, along with *justa* and *mira*, end in *a*. The last two syllables of the first Hemistich in each verse terminate in *ula* (regula sedula); there is a correspondence between the last syllable of each verse, and *atque* in the first verse and *ac* in the second verse begin with *a*.

Davies thus writes (p. 215), "The structure of ancient British and Irish being one and the same, I cannot persuade myself that the Bards of either country deserted their own established mode to imitate that of the other. On the contrary I infer that they had equally retained the same mode from some remote age in which their ancestors had been better connected." As the result of his laborious investigation of the oldest specimens of Celtic poetry that are extant, Zeuss avers that the universal construction of poetic discourse was the same among the two divisions which he makes of the Celtic race.

Apud Hibernos vetustos et Cambros.

The first Irish Grammar that was printed was that of the Rev. Francis O'Molloy. It was written in Latin and was published in 1677. Lhuyd

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transferred into his Archæologia Britannica a large portion of O'Molloy's Grammar, and especially that part of it which deals with Irish prosody. There is thus accessible to the Celtic student a somewhat full and certainly a very interesting account of the laws that govern the formation of Irish poetry in its older forms. O'Donovan has appended to his valuable Irish Grammar a chapter on versification, in which he apparently has expressed in more intelligible language the rules and explanations that are contained in O'Molloy's Grammar.

To understand the regulations by which Irish verse is affected, it is necessary to know the classification that the Irish poets were led to make of the consonants in their alphabet.

1. S was called the queen of consonants.
2. Three soft consonants: p, c, t.
3. Three hard: b, g, d.
4. Three rough: f, ch, th.
5. Five strong: ll, m, nn, ng, rr.
6. Seven light: bh, dh, gh, mh, l, n, r.

There are three kinds of verse in Irish, *Dan Direach*, *Oglachas* and *Bruilingeacht*. That the Irish poets must have possessed a large measure of ingenuity and intelligence in the composition of their poems may be inferred from the remarks of O'Molloy, who contends that the Dan Direach is the most difficult of all the metres that are found under the sun (quae sub sole reperiuntur.)

O'Donovan thus expresses the seven requisites of the *Dan Direach*.

1. A certain number of syllables in each line.
2. Four lines in each quatrain.
3. Concord.
4. Correspondence.
5. Termination.
6. Union.
7. Head.

Quartan is the term which O'Molloy uses to express one verse *i. e.* one verse of the four verses that go to form a Quatrain, or Rann Iomlan as it is called by the Irish.

The first couplet of the Rann Iomlan is called *Seoladh* or the leading.

The second is called Comhad or the closing. Concord or alliteration

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(Uaim) requires two words (of which neither can be a preposition nor a particle), in each line to begin with a vowel or with the same consonant.

A proper concord or *Fior Uaim* obtains where the last two words of a line begin with a vowel in the same consonant, *e. g.*:

Triall tar Bearbha na sreabh sean.

An improper concord obtains when the words in question are *not* the last two in the line or verse.

Correspondence (Comharda) is of two kinds, perfect and imperfect.

Perfect correspondence is an agreement of two words in number of syllables, quantity of vowels and consonants of the same class.

An imperfect correspondence obtains when two words agree in the number of syllables, in vowels and in quantity, without any regard to an agreement of consonants.

Termination or *Rinn* requires that the last word in the second and fourth lines of a quatrain should exceed that of the first and third by one syllable. If, therefore, the first line end in a word of one syllable, the second must end in a word of two and if the third line should end in a word of two syllables, the fourth must be of three syllables. The first is called Rinn or the Minor Termination, the second Airdrinn or the Major Termination.

Union, or *Uaithne*, is the same as correspondence with the exception that the same vowels are not required in each place, and that in poly-syllables it is only necessary that they agree in class.

A *Chief*, or *Head*, or *Ceann*, is a monosyllable which concludes the second and fourth lines of a quatrain in that sort of verse called a seadna.

An *Amus* is much the same with an imperfect correspondence, from which it differs only in that it requires an equality in the number of syllables.

O'Molloy states that the initial word of the first quartan of a semi-metre is called an Urlann, which may indifferently correspond with its subsequent or not. He further states that the chiefest sorts of Dan Direach are five: *Deibhidhe, Seadna, Rannaigheacht mhor, Rannaigheacht bheag and Casbhairn.* To each sort whereof, the number of quartans, number of syllables, concord and correspondence, are indispensably requisite. In the *Deibhidhe* the major and minor termination are also necessary, as is likewise Union in Rannaigheacht *mhor* and Casbhairn, and *Chief* or *Ceann* in the Rannaigheacht bheag and Seadna.

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Oglachas or the servile metre is made in imitation of all kinds of Dan Direach which have been mentioned. An *Oglachas* is only a verse in imitation of those metres, and is confined neither to correpondence, concord, union nor to true termination. *Droighneach* consists either of nine syllables in a quartan, or more, as far as thirteen, each quartan ending in a word of three syllables, and every final word must make a union with another word in the beginning or middle of the next line or couplet. There must also be a correspondence between the final words.

Bruilingeacht is composed very much after the same manner as the *Oglachas*. It requires correspondence (at least improper correspondence) and also a kind of *concord*, *union* and *head*.

The imperfect sketch which has now been given almost in the words of O'Molloy and O'Donovan, of the principal Irish metres, and the laws that govern them, may suffice to show, that the ancient Irish poets were careful students of the genius of their language; and that they were led unconsciously it may be, to adopt that method of versification and to frame those rules of prosody, that suited the natural tendency of their own thoughts and the possibilities of the language, by means of which their thoughts and feelings found expression in verse. Nor can it be otherwise than a pleasant and a profitable occupation to the Celtic student, to examine and witness for himself how the Irish poets carried out the laws of Irish versification, and how they exhibited great ability and ingenuity in moulding their verse, according to the requirements of the various metres. The commendation is altogether too faint which Davies bestows upon the laws of Irish prosody. Puerile as some of those laws may appear, they were evidently the invention of a people who applied themselves closely to the study of letters. Nothing can be clearer than that the system of Irish versification is entirely different from the system of the Greek and Latin poets, and that a faithful adherence to the laws of their own versification demanded from the Irish poets no less ability and pains and musical culture than Sophocles and Euripides and Virgil and Horace displayed in the composition of their poems.

Shaw, whose Gaelic Grammar was published in 1778 thus writes, (p. 132) "The measure of Ossian's poetry is irregular and various. Generally he has couplets of eight, though they do not rhyme, and seven and sometimes nine syllables. These feet are most commonly trochee and dactyl. The trochee occupies the first, the dactyl the second, and third, and a long syllable ends the line."

Davies was led to believe that Ossian and his poems belong to the Irish Gaels, and in accordance with his theory observed, (p. 196) "that

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the measures of Ossian's poems are essentially the same as those which are found in the works of the Irish Bards; that these measures arise from principles which are developed in the grammars of the Irish as deduced from the practice of their national poets; that the application of these principles demands such a variety of punctilious grammatical observation as to render it evident that they were the invention of a people who studied the grammar of their own language; whereas the Highlanders, the only people who use the same language with the Irish, never reduced their native dialect to any grammatical rules before the year 1778. It follows that the measures employed in Ossian's poems are undoubtedly the invention of the Irish." The conclusion at which Davies thus arrives, in spite of his critical acuteness and learning, is untenable. Apart from the fact, that we are in possession of evidence as well internal as external to prove that Ossian and his poems belong to the Scottish Gaels, his poems do not fulfil the regulations of Irish metre to which reference has already been made. It was indeed to be expected that there would be, and that there is, very much in common between the versification of the Irish and Scottish Gaels, because the same language was spoken by them. The Gaelic poems of the Ossianic era are not written in quatrains, and cannot be made to assume that division without doing violence to the narrative and interrupting its natural consecutiveness. Smith's Sean Dana, the Gaelic originals of the poems which were translated by MacPherson, and MacCallum's collection of the poems of Ossian, may fairly be regarded as strictly Ossianic in their age and character and versification. The rigid laws of ancient Irish poetry cannot apply to those collections, though alliteration and correspondence and other features of Irish poetry are frequently to be found in them.

The authority of Price is of great value in connection with the nationality of Ossian. He thus writes, (vol. I., p. 168): "The Scottish Ossian is a totally distinct creation from the Irish Ossian, though the Celtic original is the common parent of both. When MacPherson published his poems of Ossian, the Irish immediately cried out these poems are our property, they are Irish, and we are in possession of the original manuscripts and will convince the world of the fact by publishing them. They did accordingly publish portions of their Ossian together with English translations; but their Ossian was no more like the Ossian of MacPherson, than the Nibelungen is like the Iliad or Paradise Lost like the Shah Nameh. It is true the names were identical, and many of the incidents, but the spirit was totally and irreconcilably distinct. The Irish Ossian excited no feelings but such as the world had long been familiar with, but the same work as interpreted by MacPherson called forth sentiments which till then had never been felt."

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In Campbell's Leabhar na Feinne, there are many Gaelic poems which are arranged in Quatrains or in stanzas containing four lines or verses. Such poems, however, are manifestly of later date than the poems of Ossian. I am disposed to find an additional argument in favour of the Scottish nationality of Ossian and his poems, in the different complexion of his versification and in the absence from his poems of those rigid regulations which seem to lie at the very foundation of Irish poetry.

The opening verses of *Iom-Cheist Ghuill* in Smith's *Sean Dana*, for example, contain several of the peculiarities of Celtic poetry.

'S am bheileam fein am aonar,
Am measg nan ceuda colg;
Gun lann liomhaidh leam
'S a chath dhorcha.

Here we have very fair examples of concord and correspondence. A similar remark has to be made concerning the first verses of *Diarmad* in the same collection:

Cia tiamhaidh thu nochd, a Ghleann Caothan!
Gun ghuth gaothar thu 's gun cheol:
Tha suinn na seilg' an suain gun eiridh,
'S na filidh aoibhinn gun aon diubh beo.

Iarmbearla is a term which old Irish grammarians were wont to employ, to show that the *article, possessive pronoun, adverb, preposition* or *conjunction* coming between any two words, neither forms nor hinders a concord. Even when the most careful compliance with that regulation is given, it will appear that in the verses which have been cited, an improper concord obtains between *ghuth* and *gaothar*, between *suinn, seilg* and *suain*, and as some grammarians would contend, between *Ghleann* and *Caothan*. A striking peculiarity appears in those verses; for the last word of the first verse corresponds with the middle word of the second verse, *i. e., Caothan* corresponds with *gaothar*, and *eiridh* the last word of the third verse corresponds with *aoibhinn*, the middle word of the last verse.

In *Caomh-mhala*, one of the poems of Ossian which MacPherson translated into English, these verses occur, exhibiting, as they do, some of the peculiar characteristics of Celtic poetry:

Taom, a Charuinn taom do shruth;
An aoibhneas an diugh siubhal sios;
Theich coigrich a b' airde guth.
Cha-n fhaicear an steud-each 'san t-sliabh,
Tha sgaoileadh an sgiath an tir thall.

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Here a proper concord obtains between *siubhal* and *sios*, and between *tir* and *thall*. An improper concord prevails between *taom* and *taom; fhaicear* and *each*, *steud* and *sliabh*, *sgaoileadh* and *sgiath*. There is likewise a correspondence between *shruth*, *diugh* and *guth*, and between *sliabh* and *sgiath*.

The Iambus is the foot that enters most frequently into the poems of Ossian. It has to be frankly admitted that in scanning the poems of the Bard of Selma, a rigid adherence to the laws by which the poems of Greece and Rome are scanned, is simply impossible. Sometimes, by omitting the first syllable of a verse, as German scholars are wont to do in scanning the choruses of the Greek tragedians; or by omitting the the first two syllables as is the wont at times of the same scholars, it is possible to find purely Iambic feet in the other syllables of an Ossianic verse. With the aid, therefore, of an *anacrusis* or a *base*, the poetry of Ossian can be scanned as Iambics in very many instances. Trochees obtrude themselves occasionally in the middle of a verse, and even Dactyls make their appearance in the middle of a verse; so that to describe the verse as purely Iambic or Trochaic is out of the question. Though the poems of Ossian, having peculiarities of their own so far as prosody and scansion are concerned, refuse to obey the laws by which Greek and Latin poetry is scanned, the rhythm is of such a character that the cultivated Celtic ear can readily detect whether a verse or poem is Ossianic in its structure or not.

Miann a' Blaird Aosda, a poem of exquisite beauty, which, though the author and the date of its composition are unknown, must belong to a remote age, presents one of the best examples in the whole range of Gaelic poetry, of Iambic feet. The metre is Iambic Dimeter Acatalectic, *e.g.*:

O caraibh mi ri taobh nan allt,
A shiubhlas mall le ceumaibh ciuin,
Fo sgail a' bharraich leag mo cheann,
'S bi thus' a ghrian, ro-chairdeil rium.

Bishop Carswell's translation into Gaelic of John Knox's Liturgy was published in 1567, and was the first Gaelic book that was ever printed. In a brief Gaelic hymn or poem which he composed to the Gaelic book that he was sending forth among his Scottish and Irish fellow-Gaels, he shows an accurate familiarity with the peculiar features of Celtic verse.

Gluas romhad, a leabhrain bhig
Go hua ndiubhne rig ad reim.

There is here a correspondence between *bhig* and *rig* and an improper concord between *rig* and *reim*.

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Gach seancha, gan seanchas, saobh.
Gach fear dano nar aomh breg,
Cumand eadar agus iad,
A leabhrain bhig biadh go heg.

Those verses furnish other examples of alliteration and correspondence in Carswell's hymn.

Lhuyd's *Archæologia Britannica*, was published in 1707. There are appended to the preface several Gaelic poems in praise of Lhuyd himself and of his great work on Celtic philology. These verses composed, as they were, by the Priest of Kildalton have several of the beauties and peculiarities of Celtic prosody.

"Tuigseach saoibhir do theagasg,
Soilleir tarbhach seimh do ghloir,
Lionmhur brioghmhur do shean fhocail,
Sgiamhach, taitnambhach, ciallach mor."

Regarding Cambrian or Welsh poetry, Zeuss asserts that the old poems of the Welsh are almost of the same structure as the old Irish poems. There is this difference, however, that the final consonant which is almost a monosyllable and is always full, is continued through several verses according to the pleasure of the Cambrian poet, and that even in separate parts of poems greater freedom obtains in the continuation of verses. The contraposition or antithesis of Hemistichs does not exist as is the case with Irish poetry. In his literature of the Cymry, (p. 475-476), Stephen writes "that the bards by fixing an artificial standard of versified perfection, concentrated attention upon the words and neglected the spirit of their poems. The merits of their poems are rather historical than poetical. Bardism was on the whole unfavourable to extraordinary merit and true poetic excellence. The regulations of the bards have acted as dead weights upon imagination, and the metaphors and images of many of the Kymric poets display either a want of taste or of originality." He further writes (p. 486), "I have another quarrel with the bards, for not only do they display affectation in the 'beginnings' of their lines but they also display it in their 'endings,' the effect of both practices being the depreciation of the poetry and filling up of the lines with unmeaning words." Price, than whom there is no better authority on all matters affecting Welsh poetry states (vol. 1, p. 209) "that the Welsh Bards rejoice in the Lyric, and when by chance they deviate but for a moment into the narrative, or Ballad, the style seems uncongenial with their spirit and they instantly quit it and return to their favorite strain." (p. 313) After 300 years of Roman Dominion upon the departure of that people,

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Welsh poetry had not the slightest resemblance to that of Rome. The essentials of Roman metrical composition consist in quantity, those of the Welsh are Rhyme and Alliteration. The Latin classic prosody does not recognize the two last named requisites, nor does the Welsh know anything of classic quantity, neither is there any resemblance in the structure of the poems of the two races, further than what is the result of mere coincidence in all metrical compositions."

Alliteration, proper and improper concord, is of continual occurrence in Welsh poetry.

In Aneurin's famous poem Gododin, there is a variety of metres. "It is strictly a Lyric composition, a succession of comparatively unconnected strophes."

Ardyledawc cann cyman o fri
Twrf tan a tharan a rhyuerthi
Gwrhyt arderchawe marchawc mysgi,
Rudd fedel rhyfel a eidduni.

In these verses *cann* and *cyman* form an improper concord; *twrf*, *tan*, *tharan* also form an improper concord; *marchawc mysgi*, form a proper concord; *Rudd* and *rhyfel* form another improper concord. Alliteration is thus largely present in those verses, each of which ends in the same vowel, *i*.

A Triad, which is said to have been composed by Arthur, is faithful to the peculiarities of Celtic verse,

Sed ynt fy nhri chadfarchawg
Mael hir a Llyr Lluyddawg
A cholofon Cymru caradawg.

Two examples of proper concord occur here. Alliteration obtains between three of the last words in the last verse. The verses terminate in the same syllable; seven syllables frequently form one verse, a number which, whatever the explanation of its prevalence in Celtic poetry may be, is of common occurrence. Stephens mentions no less than twenty-four metres which were in use prior to the times of Meilir, one of the Welsh bards. He states that "the miserable affection of writing verses in all the metres has now been abandoned, and the poet is very properly allowed to use such of the metres as suits his taste."

Zeuss maintains, that if the older Cornish and Armorican poems were extant, they would doubtless exhibit a structure similar to that of the ancient Cambrian poems. Alliteration is wanting in the more modern Cornish and Armorican poems. The ancient Cornish drama containing

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as it does the most important portion of Cornish literature that is extant, was published along with an English translation on the opposite page, by Edward Norris in 1859. The Beginning of the World, the Passion of our Lord Jesus Christ, and the Resurrection of our Lord Jesus Christ: Such are the names of the poems that constitute the Cornish Drama. The general division of it is into stanzas of six verses. Seven syllables commonly form one verse. There is an agreement in sound between the last syllable of the first and second verses, of the fourth and fifth verses, of the third and sixth verses, *e. g.*,

Mester genough yn gylwyr
Hagh arluth heuna yv guyr
Ytho mar kruge golhy,
Agos treys h' aga seghe
Golheus pup treys y gyle
Ahanough Kepar ha my.

In the introduction to his edition of Kelly's Manx Grammar, the late Mr. Gill inserted a Manx poem on which he bestowed great praise. The poem is written in Iambics and deserves the praise which the famous Manx scholar bestowed upon it.

As Cre ta gloyr, ach aaliad ennym vie,
Ennym! ta myr y ghall ta sheidey shaghey,
Shoh moylleyn pobble, my she moylley shen.

The famous Manx Song, Na Kirree fo Sniaghtey, or "The sheep under the snow," is written in Anapaests, *e. g.*

Lurg geurey dy niaghtey as arragh dy roi.
Va ny shenn chirree marroo's n' eagin veggey bio,
Oh! irree shiu guillyn as gowshin dyn clieu
Ta ny Kirree fo-sniaghtey shen va nyn draid reeve.

Vannin veg veen has all the raciness of Celtic verse.

O vannin veg veen
Tayns mean y cheayn
Aynjee ta lane eeasteyryn,
Tra ta 'n oarn cuirt,
As ny praasyn soit,
Goll roue dy cherragh ny baatyn.

The translation of Paradise Lost into Manx by Christian is in Iambics, *e. g.*, Pargis Caillit.

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Yn Chiarn Iee skeayl magh reeriaght vooar da hene,
Liauyr fegooish Kione, as fegooish cagliagh lhean:
Niau jir mayd r'ee; cheer dy vaynrys vooar
Lane jeh dagh mie, jeh berchys, ooashley's gloyr.

Specimens of Pindaric impetuousness and originality of metre are to be found among the Celtic bards. Mary MacLeod or Mairi Nighean Alasdair ruaidh, furnishes many examples of such rapidity of thought and versification, *e. g.*,

Tigh mor macnasach meaghrach,
Nam macaibh 's nam maighdean,
Far 'm bu tartarach gleadhraich nan corn.

Duncan Ban MacIntyre is one of the most remarkable poets in the whole range of Celtic poetry. He could neither read nor write, and yet some of his poems are acknowledged to be the best of their kind in Celtic literature. "I shall be surprised," writes Professor Blackie, "to learn that there exists in any language, ancient or modern, a more original poem of the genus which we call venatorial than the Ben Dorain of Duncan Ban. What Landseer, in a sister art, has done for animals in general, that MacIntyre in this singular work has done for the deer and the roe." Blackie has translated Ben Dorain into forcible English verse. Principal Shairp has conferred a similar honour on Ben Dorain. Mackenzie in his introduction to *The Beauties of Gaelic Poetry*, (p. 51) thus writes, "In that admirable poem called Beinn Dorain, Duncan Ban MacIntyre has adapted the verse to the piobaireachd notes. Commencing with the *urlar* the ground-work or air, the second part is the *Siubhal* or quickening, arranged in a different measure, to which succeeds the *Crun-luath* swifter running music to which a suitable measure is likewise adapted. It is a curious effort, and his model seems to have been an older piece which accompanied *Moladh Mhairi* the praise of Mary, otherwise the MacLachlan's salute." Trochaics of a rapid character, Iambics of longer and shorter metres, alliteration, correspondence, etc., are to be found in Ben Dorain. *Moladh Moraig* is the name of a poem which Alexander MacDonald composed after the same model. I have in my possession a poem after the model of Ben Dorain, by the Rev. Dr. Blair, of Nova Scotia. The talented author designates his poem *Ruagadh nan sionnach*, or Hunting the foxes, and indicates a masterly command of the Gaelic language as well as a rare aptitude for framing tuneful cadences.

In his *Coire cheathaich*, Duncan Ban reproduces some of the peculiarities of Celtic verse, *e. g.*:

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'Se Coire cheathaich nan aighean siubhlach
An Coire runach a's urar fonn,
Gu lurach, miad-fheurach, min-gheal sughar,
Gach lusan fluar bu chubhraidh leam.

In addition to concord, and to the recurrence of the same sounds, there is in those verses what Zeuss designates *Consonantia Contraposita*, or a correspondence between the last words of the Hemistichs. In his poem in praise of the Caledonian Society of Toronto, Evan MacColl furnishes beautiful examples of the same correspondence. The stanza which he has adopted is the same as that of *Coire-cheathaich*. He had added, however, one metre or two feet to each verse. The poem is throughout very able, and reflects great honour on the author. The correspondence between the Hemistichs in such verses as these is very beautiful, *e. g.*:

Cha-n eol domh toil-inntinn is mo na bhi' cluinntinn,
Piob mhor nan dos cnaimh-gheal is fonnmhoire fuaim;
Nuair theid i gu comhradh air faiche no'n seomar,
B'e'n Ceol thar gach Ceol leam a torman' nam chluais.

Though the Greek tragedians made frequent use of Anapaestic metre, no metre of that kind was employed by the Latin poets of the Augustan age.

Venient annis saecula seris
Quibus Oceanus vincula rerum
Laxet, et ingens pateat tellus
Tethysque novos delegat orbes
Nec sit terris ultima Thule.

These verses which occur in the Medea of Seneca and which have been regarded as prophetic of the discovery of America, furnish one of the best examples that can be adduced of the adaptation to Latin verse of the Anapaestic Dimeter Acatalectic. *Lochiel's Warning* by Campbell, and *The Destruction of Sennacherib* by Byron are excellent specimens of the application of the same metre to English verse. Having the same form of scansion by accent, as English verse and the Gaelic adaptations of Anapaestic verse have, it was beforehand to be expected that Gaelic Anapaests would not be and ought not to be inferior to English Anapaests in musical rhythm and faithfulness. The English and Gaelic version of his *Ealaidh Ghaoil* by the celebrated Gaelic scholar, Ewen MacLachlan, must command the admiration of every student of poetry: so faultless is the accuracy and so harmonious in both languages are the numbers of

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the talented author. Mrs. Mary MacKellar is a poetess whose ability in the composing of Gaelic Anapaests is very remarkable, indeed, and whose mellifluous metres would do credit to a Greek tragedian. Several of Mrs. MacKellar's poems are written in Anapaests. She appears to fine advantage in praise of a meeting which was held in Edinburgh and of which the late Lord Colonsay—himself a Gael of the Gaels—was chairman, for the purpose of taking steps to establish a Chair of Celtic Literature in the University of that city. I shall give two stanzas merely of the poem in question.

O lionaibh dhomh corn 'us gu'n ol mi le fonn
Deoch-slainte nan uaislean sliochd uaibhreach nan sonn,
'S air tus cuiream failt air an t sar 'bh'air an ceann,
Am morair bho Cholonsa nan gorm ghleann 's nam beann.

A chanain mo mhathar, a chanain mo ghaoil,
Bidh tu fas ann an sgiamh gus'm bi crioch air an t-saogh'l,
'S ged bha thu gu tinn, gheabhar cinnteach dhuit leigh,
'S bidh tu luinneagach binn feadh gach linn' thig nar deigh."

Mrs. MacKellar is equally at home in various forms of Gaelic verse, as her touching elegy in connection with the death of Prince Leopold clearly shows.

O buailidh mi 'n teud orbhuidh,
Fann bhuailidh mi 'n teud
'S mi' sileadh nan deur,
O'n chuala mi' n sgeul bronach.

Campbell of Ledag has composed Gaelic Trochaics and Iambics that are worthy of great praise. Neil MacLeod with an elegance of diction that would do honour to Tennyson with his pure Anglo-Saxon, has shown that he is a master of Gaelic verse, and that his native language can be fashioned by him into very musical combinations. The Irish poems that appear in the Gaelic Journal of Dublin, and in the Gaodhal of Brooklyn; the Gaelic poems that appear either in a permanent form or that have an ephemeral existence in newspapers and magazines, indicate that Celtic versification is keeping pace with the greater refinement and concinnity of modern poetry; and that the Celtic languages, if justice is done to them, have intrinsic strength and powers of adaptation which can gain for them, and ought to gain for them, as long and as glorious a future as is in store for even the most popular forms of German and English verse.

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The domain of Celtic prosody is wide and fertile; and, although several tillers of the soil have ploughed many a deep and fruitful furrow in it, very much yet remains to be done. There is need of a Eugene O'Curry, who, intensely in love with the language and the poetry of his Celtic forefathers and brethren, will apply rare powers of mind and diligence to the thorough elucidation, for the benefit of his fellow Celts and of the literary world at large, of Celtic prosody, acting until his task has been happily completed, on the advice of one of the acknowledged masters of Latin verse;

"Nocturna versate manu, versate diurna."

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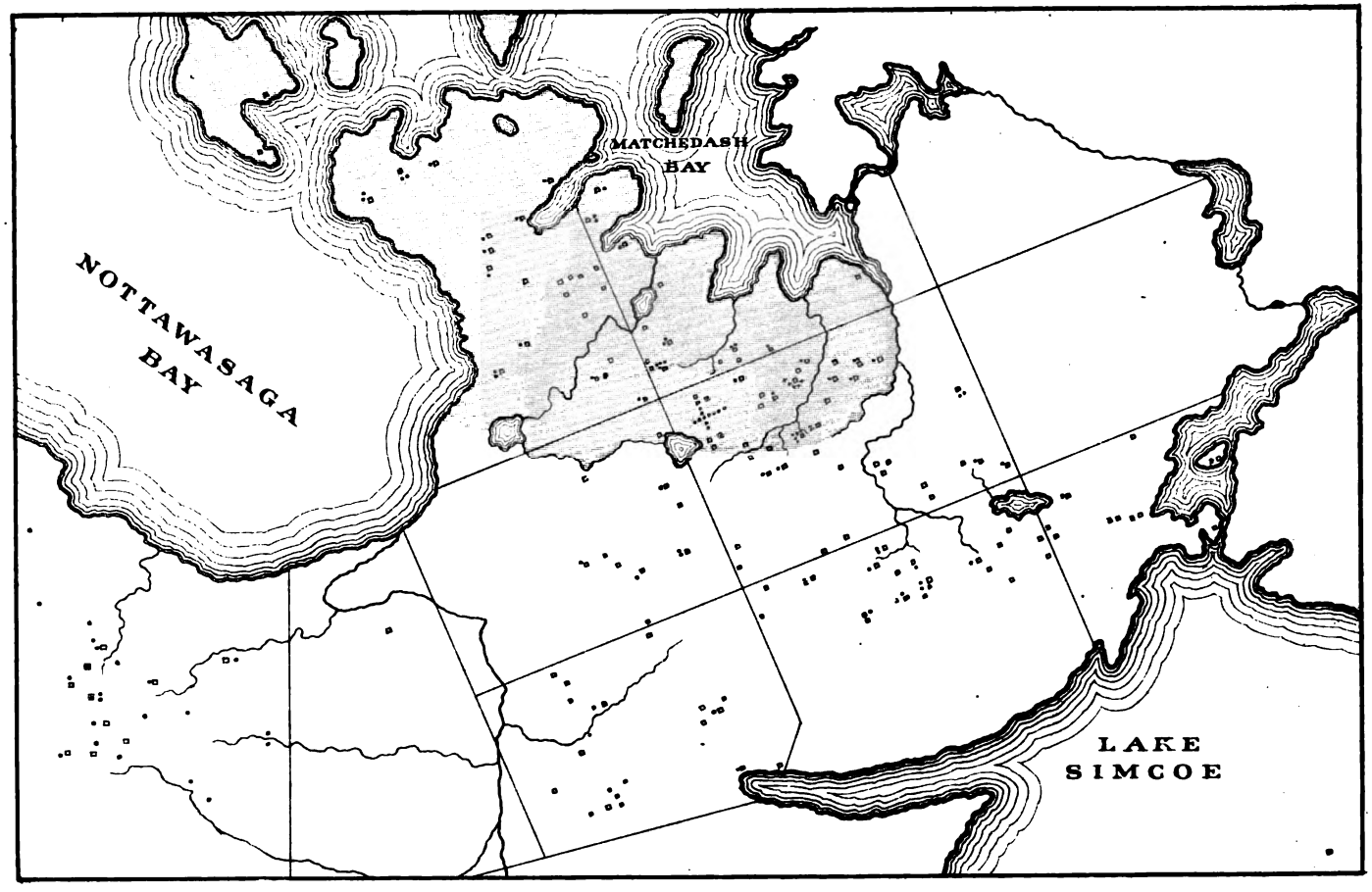

MAP SHOWING THE POSITION OF THE HURONS WHEN THE IROQUOIS ATTACKS BEGAN.

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NATIONAL CHARACTERISTICS AND MIGRATIONS OF THE HURONS AS INDICATED BY THEIR REMAINS IN NORTH SIMCOE.

By A. F. Hunter, M.A.

(Read 25th September, 1891).

The tract of land lying between Lake Simcoe and Georgian Bay is commonly known as the abode of the Huron Indians during the first half of the seventeenth century. But, to describe their location more definitely, it was on the high ground of the interior of this tract that they chiefly dwelt, as appears from their remains found at the present day; in the low parts of the wide valley of the Nottawasaga River, between them and the Tobacco Nation, very few traces of aboriginal occupation are found. It will be proper to lay special emphasis on the fact that the Hurons occupied high ground, because in this respect they contrast in a striking manner with the later Algonquins, who subsequently occupied the same district but preferred to haunt the waterways during the greater part of the year, and were naturally an aquatic people. Corresponding with this difference between the Hurons and Algonquins in the choice of locality, there was a similar contrast between their places of burial—so marked indeed that it is still impossible to confuse them. The Hurons selected places for burial purposes near their villages, almost always in dry and sandy soil, and remote from water. Of all their ossuaries brought to light in this century, only a few have been found where the soil is clay. But the Algonquins buried their dead near the river banks and lake shores, in places which they could easily reach in canoes.

The almost complete annihilation of the Hurons at their own villages in 1649, has been the most notable event in connection with the history of their race. It is possible to see at the present day the very spots where the massacres took place; these are indicated by large numbers of iron tomahawks strewing the ground, besides other marks of strife which are still visible. In Indian warfare, tomahawks were often hurled at the enemy—a practice that has been noted by Catlin [*Life Among the Indians*, chap. 2.] and other writers. Hence we now find patches of ground where they are found in abundance. On the accompanying map of North Simcoe there is defined the district in which these patches

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occur, and which may therefore be regarded as the scene of the attacks by the Iroquois. The southerly limit of this afflicted territory is sharply defined. Two small lakes, joined by a stream which passes through a large swamp several miles in length as well as breadth, formed a natural protection to the Hurons on their exposed southwestern frontier; and thus, on the south eastern boundary only, were they exposed to the Iroquois invasions. Such was the position they occupied just before the final attacks were made upon them. The small district thus bounded contained all the villages in which the Jesuits labored, and included even Teanaustaye (St. Joseph) which Dr. Parkman, following Dr. Tachè's notes, places much farther to the south. There is a fringe of villages lying outside the southern and eastern boundaries of this district where but few tomahawks or signs of conflict are to be seen amongst the remains. Other features of the small district in question, besides the patches of tomahawks, are: the abundance of small ossuaries, indicating hasty burial; artificial holes in the ground, sometimes in rows and occasionally in crossrows; *caches* and isolated graves in great numbers. All these features are usually associated together, and indicate the village sites where massacres took place.

Compared with that portion of New York state once occupied by the Iroquois, the Huron territory contains fewer earthwork enclosures; Squier [*Antiquities of the State of New York*] records no less than 15 of these earthwork enclosures in* Jefferson Co., N. Y., alone. Compared also with the counties west of Lake Ontario and along the north shore of Lake Erie,—the district once occupied by the Neuters,—there is a similar contrast; Mr. Boyle, in his Annual Archaeological Reports of the Canadian Institute, has described several in that section of the country. In North Simcoe, however, whatever earthworks there are to be found are few and unimportant; only in a few cases does earth or *debris* appear to have been thrown up to any extent, except the ashpiles at the

* Since the above was written, a valuable article by Rev. W. M. Beauchamp, of Baldwinsville, N.Y., on the "Indian Occupation of New York," appeared in *Science* (Feb. 5, 1892). Mr. Beauchamp gave therein the numbers of earthworks, stockades, mounds and ossuaries of each county in New York State, recorded up to date, the earthworks in Jefferson Co. being placed at 33, and the ossuaries at 6.

A paper on "Early Indian Forts in New York" was read by the same writer at the Rochester meeting of the American Association in August, 1892. The paper is summarized in the Proceedings of that body as follows: "The form and construction of earthworks varied, and these generally preceded stockades, which were of four kinds: single, double, triple, and quadruple. The ditch was less defensive than incidental, and in stockades post-holes were not always used. Many examples of both modes of defence still remain, and Squier's estimate of their number was a fair one. According to the catalogue of the Bureau of Ethnology (Washington) defensive works belong mainly to the northern U.S., especially near the great lakes."

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villages, and the pits made during the conflicts mentioned in the last paragraph.

There is a deficiency in regard to ossuaries in the Iroquois and Neuter territories in comparison with the Huron district. Squier, in his examination of the Iroquois country of Central New York in the volume already referred to, records but two in Jefferson County, and in Erie County but four or five. In three townships of North Simcoe—Tiny, Tay and Medonte—the three which include the afflicted district described above, more than sixty to our knowledge have been found. The location of sites upon high peninsular points of land, especially along the brows of lake terraces, sand ridges, or bluffs, seems to have been extensively followed by all three nations.

Since the year 1820, when Simcoe County first began to receive European settlers, discoveries of Huron ossuaries have been constantly taking place. In order to preserve a record of Huron occupation, we have catalogued 140 of these ossuaries; and from the scanty facilities enjoyed in the accomplishment of this task, it is clear that many more still remain unrecorded in our list. In these 140 ossuaries there was buried a population that from a careful estimate may be set down approximately as 25,000. The ossuary of average size, in the district, contains about 200 skeletons. From these figures it will be seen that the Jesuits' estimates of the Huron population were by no means exaggerated.

The proportion of ossuaries to village sites is much greater in the Huron district than seems to be the case in other parts of the province. It is not an unnatural inference from this fact, that those who occupied the other parts to the south and east, perished in North Simcoe and were buried there. In other words, it became the cemetery of Central Ontario at that period. It is not difficult to understand the cause of this, viz., the persecution of the Hurons by the Iroquois and the consequent retreat of the former toward the north.

Two or three additional facts may also be stated in support of the view just given. The most southerly towns of the Huron district were the largest, indicating a migration from the south. Champlain's map shows that in 1615 the Hurons extended southward to Lake Ontario as well as into the counties east of Lake Simcoe, and were not confined to North Simcoe alone as they became at a later date. This has been confirmed by the finding in South Simcoe, and in York, Ontario, Victoria, Peterborough, Durham and other counties, of many village sites and ossuaries of Huron origin. In a valuable paper by Mr. George E. Laidlaw, published in Mr. Boyle's Fourth Annual Report (1890), he suggests that

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the aboriginal remains in Victoria County were the work of Hurons. Further evidence of their migration is yielded by the frequency of French relics in North Simcoe and their scarcity in the southern and eastern counties, indicating that the former was chiefly occupied by the Hurons after the year 1615 when the French first came amongst them. This has already been shown at some length in a paper by the writer entitled "French Relics from Village Sites of the Hurons," which was read before the Institute and published in the Third Archaeological Report (1889).

It is often stated that a "Feast of the Dead" was held in each of the five tribes of the Nation once in ten or twelve years. But from the large number of ossuaries which contain French relics, and which accordingly must have been interred between the years 1615 and 1649, it is evident that the ceremony took place much oftener.

There can scarcely be a possibility that an agricultural nation, such as the Hurons were, could have had its beginnings in this province, where the prevalence of forests would prevent any development in an agricultural direction, but where, on the contrary, the conditions would produce hunters and fisher-men like the Algonquins. It may be reasonably inferred that they originally came from a region where there were few trees to interfere with agricultural operations, such as the western plains; at any rate a northern or eastern origin of this people in the Laurentian rock region appears unlikely. Much investigation, however, is still required before these questions can be settled and the origin of the Huron race determined.

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RUTHERFORD'S NARRATIVE—AN EPISODE IN THE PONTIAC WAR, 1763—AN UNPUBLISHED MANUSCRIPT BY LIEUT. RUTHERFORD OF THE "BLACK WATCH."

PRESENTED TO THE INSTITUTE BY THOMAS HODGINS, ESQ., M.A.

(*Read 5th March, 1892*)

Major Gladwin of the 80th Regiment, commanding officer of Detroit, being anxious to know whether the lakes and rivers between that place and Michellemakainac were navigable for vessels of a greater burthen than the small batteaux then made use of, ordered Captain Charles Robson of the 77th Regiment, who had the command of the king's ship upon Lake Erie, with a party of six soldiers and two sailors, with a large batteaux with the necessary implements, to sound the lakes. Sir Robert Davies, who had passed that winter at Detroit, having a curiosity to see further into the country, (which in fact was the motive which had induced him to come so far as Detroit,) accompanied Captain Robson, and both of these gentlemen inviting me to join them, I joyfully accepted the invitation, as it had then all the appearance of a pleasure jaunt. We promised ourselves excellent sport in shooting water fowl, with which that country abounds, not in the smallest degree dreading any interference from the savages around us, who but a little before in full council renewed their profession of friendship for the English, and received from them presents to a considerable amount. We accordingly set out on May 2nd, 1763. Captain Robson, myself, and the party were in the batteaux. Sir Robert Davies and a Pawnee or Indian slave were in a little wooden canoe, being better than a batteaux for going in shallow water after the game, and so easily navigated that he and his boy were sufficient to cross the lakes and go up the creeks among the Indian villages. We passed several native villages, but there appeared to be very few Indians in them. We supposed that they were out on a hunting party, but afterwards found they were on an expedition of a very different nature; being, in fact, collected at the place where we were afterwards attacked by them.

May 6th.—In the morning we arrived at Pinuree, where were some Canadians building a saw mill, for whom we brought (at the desire of a

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French gentleman) a few barrels of flour, for which they returned us thanks, and told us with all the rhetoric they were masters of, that all the Indians around were in league to take up the hatchet against the English; that they knew we were coming that way, and were waiting six miles up the river to seize and destroy us; and that if we proceeded any further we should certainly be cut to pieces. They begged us with tears in their eyes for God's sake to return, and by reason of the winds and the strong current of the river we might gain the fort before they could perceive we had discovered their intentions. This was friendly advice given by people who showed in their countenances that they had our safety at heart; and had we followed their counsel many would have saved their lives on this occasion, and others avoided a long and dangerous captivity. Captain Robson partly doubted the truth of what the Canadians had told us, partly through mistaken confidence that they would not dare to attack us until cover of the night; and it being then noon, thought that he might go on six miles further and sound about the mouth of the river Huron; which done his work would be finished, and then return to the fort. He therefore ordered the rowers to ply their oars, and without seeming to suspect any danger, proceeded until we came within six miles of the above river, where there was a small Indian village, the very place the Canadians told us we would be attacked by the savages. Then it was, though alas! too late, that Captain Robson discovered the truth of the information we had got, for the whole bank of the river was covered with Indians, to the amount of three or four hundred men. Sir Robert Davies was at this time considerably before in his canoe, on shore, and smoked a pipe of friendship (as they called it) with some of their chiefs till we came up. He advised us to row on and pass him, and not to seem to suspect that they had a design upon us. Here I must observe that the river turned narrow, and was so rapid that we were obliged to keep the boat close to the shore, and even then the Indians could walk faster than we could row. To have attempted to return would have been inevitable destruction to us all. Besides that they had all their canoes ready to pursue us. This we were sensible of, so we kept rowing on and humoured them as much as possible. They crowded round us, men, women, and children, giving us the friendly appellation of brothers, told us they were glad to see us, and begged that we should come on shore and we would have whatever was good; the squaws or Indian women showing us maple sugar, fish, etc., to induce us to land. We did not, however, choose to accept of their invitation or presents. They asked for some bread and tobacco, which we gave them. This was only to take up our attention, for all the while they were filing off by degrees, till at last there was not an Indian to be seen. The squaws were collected so

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closely on the bank of the river, endeavouring to divert our attention by ridiculous stories, that it was impossible to see what was going on behind, or what the men were about. The warriors, however, were then busy posting themselves behind a rising ground a little before, so that when we came opposite that place—the squaws as it had been preconcerted ran as fast as they could out of the way—the warriors commenced firing upon us at the distance of sixty yards. Captain Robson was immediately wounded on the left side, which showing me, he called to the men to sheer up, but alas! he had just spoken the words when another shot through his body killed him. I then took the helm and endeavoured to bring round the boat, but two of the soldiers being now killed, the remaining five could not navigate the boat, and as they had neither their arms ready nor loaded, they thought only of screening themselves as best they could from the enemy's fire; but it was all in vain, for the Indians, seeing Captain Robson our chief killed, and the confusion that prevailed, rushed upon us and easily boarded us, raising at the same time and in accordance to their custom on such occasions, the most dreadful cries and yellings, which they called the "Death Gralloo." They had changed their appearance from what it was when they called us brothers, having at that time their blanket and ornaments on, but now they were painted black and red, making a very frightful appearance. Every one of us was now seized by his future master, for by their custom whoever lays hold of a captive by the hair of his head, to him he belongs, and none may take him from him. I was laid hold of by one whose hideous aspect was enough to banish every hope of receiving quarter, but indeed before this I had given up any hope of being saved, and became in a manner resigned for the worst. They immediately scalped Captain Robson and the other two soldiers who were shot. My master (for such I was now to acknowledge him) dragged me out of the boat by the hair of the head into the water, which took me up to the neck, endangering my drowning; however, he brought me safe on shore, and with a rope adorned with trinkets (which they always carry about with them to bind their prisoners of war) bound me and delivered me over in charge of his squaw, returning himself to plunder the boat. All this time, Sir Robert Davies, as I was afterwards informed by his Indian boy, seeing the savages attack us, endeavoured to escape in his light canoe to the opposite side of the river, while the Indians called to him repeatedly to come on shore and deliver himself up, promising not to hurt a hair of his head. He paid no regard to their words, which so exasperated them that two of them levelled their pieces at him and brought him instantly down. His body fell over into the water, and having picked it up, they cut off the head and buried the trunk; the head they afterwards interred, after

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having scalped it. My master returned with his share of the booty from the boat, which he laid upon my back, and marching through the village came to the hut where he lived. We had not been long there when a great many Indians came in, and got drunk upon spirit which they had plundered, and as I knew in their cups they often killed one another, I again considered myself in as much danger as ever. One of them dressed in Captain Robson's clothes came in very drunk, and seeing me lie in the corner with my hands tied, set up a shout, calling me an English dog, and made a stroke at me with his tomahawk, which must have killed me, had not another Indian more sober, and whom I afterwards found to be the best of them, seized his arm and prevented him, and then turned him out of the hut. My master's wife seeing the danger to which I was exposed, and knowing that he or some other Indian might return, made me lie down behind her, and covered me over with skins and furs; soon after the same Indian did return and demanded me of my master, saying that "No English dog should be left alive," upon which he was turned out a second time and well kicked. Not long after this a party of them came and determined to have me, and my master was obliged in order to save me, to tell them that I was carried to another hut, which satisfied them. The whole night they kept drinking what liquor we had brought with us, and making a most hideous yelling, dancing and singing, while they were feeding on poor Captain Robson's body. This shocking piece of barbarity was practised only by some of the Indian tribes to the northward. The Six Nations, who used their prisoners when alive much worse than those whose captives we were, yet never eat human flesh. They of course do not devour it for want of food, but as a religious ceremony, or rather from a superstitious idea that it makes them prosperous in war. They teach their children to be fond of it even from infancy. The next day my master's son brought some pieces of the body into the hut, and roasted them upon a stick, and endeavoured at the same time to prevail on me to eat it, after assuring me that Englishman's blood was very good to eat. My master desired of me to taste it, telling me that I was never going back to the English, so that I ought to conform to the manner of the Indians. I told him that I would obey him in every thing he ordered me, and even that if he insisted upon it; but that it was very disagreeable for me, and that was the only command I would feel any hesitation in performing, and begged that he would not absolutely insist upon it. Thus by assuming readiness to acquiesce, I avoided eating the remains of my friend, and I believe by showing a desire to please him I rather gained upon his affections. My hands were still bound behind my back, this day being the second of my captivity. Never having seen or heard any thing of the poor soldiers, I concluded

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that they had shared the unhappy fate of their captain, which added the more to my uneasiness, fearing that I would not be more favourably dealt with. However, towards the evening of that day, I saw Sir Robert's Indian boy, who told me of some of the soldiers being alive. This boy having lived long with the English, in speaking their language made me think that he would desire to get free from the Indians who used him much worse than the English. I therefore thought I might confide in him, so laid myself open to him and told him of a scheme I had formed of our escape together, which was, that we should both get out of our respective beds at night when all were asleep, meet at a certain place agreed upon and then untie each other, and as he understood travelling in the woods, he would pilot us to Fort Detroit, which was not above eighty English miles distant, each of us bringing with him as much fish as would be necessary to subsist on during the journey. He agreed to this proposal, went off with an intention as I supposed of meeting me at the place appointed; however, towards the end of the evening, I was surprised to see my master come into the hut, looking very angrily at me, having a wooden post and an axe in his hand. Without saying a word he put one end of the post into the ground, and told me in an angry tone something I did not understand, with signs to me to lie down on my back; then taking my leg a little below the ankle, put it into the notch against which he tied another piece of string, so close that I could not move to turn myself on my side, but lay on my back with my hands bound, while my master, drawing the ends of the rope under his body lay down next me with his squaw on a bearskin. I passed the night like a criminal just before execution, with this difference, I had nothing to reproach myself, no offence committed against my God or the laws of my country; this treatment gave me good cause to suspect treachery on the part of the Indian boy, who I found afterwards had, in order to get his pardon, which he did, discovered my intentions of escape. Next morning my master loosed my leg, and by means of an Indian who spoke English, informed me that he had discovered my intention of escaping, and that had I done so or even attempted it, death would have been the inevitable consequence, showing me the situation of Fort Detroit, surrounded with four Indian nations, viz.: Chippewahs, (the nation I was with) Otterwahs, Ponteuatheimies, Wiandots, who so blockaded the place that nobody could come in or go out, and that in a few days there would not be an Englishman left in it alive; whereupon I found it absolutely necessary for my safety to affect to relish their savage manners, and put on an air of perfect contentment, which I had often heard was the way to gain the affections of the Indians, whereas showing discontented conduct irritates them and creates worse treatment, and even draws down

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death itself on the captive who is so unfortunate as not to be able to accommodate himself to his situation. I therefore assured him I should no more think of leaving him, which so pleased him that he took me out to walk and pointed out to me the spot where Sir Robert Davies was buried and what remained of Captain Robson's body, showing me likewise how impossible it was for us to have escaped in our boats. He then led me to where the bodies of the poor soldiers lay who fell in the attack, and were become food for the dogs, which were devouring them; he then loosened my hand, and with the string bound up a heavy bundle of sticks which he placed upon my back, telling me that I was always to do that or whatever his wife desired me. When delivered of my burden he again tied up my hands, and fastened the rope to the rafters of the hut, but he did not put my feet in the stocks as the night before. Yet it was equally impossible for me to effect an escape, and indeed by this time I had given up all hopes of it, unless a more favourable opportunity occurred. Next morning my master went off in his canoe to join the rest of the warriors encamped at Detroit, leaving me to the care of his father, who seemed fond of me, and wished that I should become a savage as soon as possible. Soon after my master's departure he fairly stripped me of my clothes, and told me I should wear them no more, but dress like an Indian; he accordingly gave me a blanket, then shaved my head leaving only a small tuft of hair on the crown, and two small locks which he plated, with several silver brooches interwoven, making them hang over my face, which was painted a variety of colours; he likewise presented me with a tobacco pouch and pipes, telling me I should smoke, which I did, and afterwards became very fond of it. The hunting season being now passed, the Indians lived on fish, without bread, butter or salt. This did not agree with me. I became so very weak as to be rendered incapable of walking for seven or eight days, during which time my master's father informed me that I should not be eaten if I died. Ten days after this my master returned with the rest of his family, and after much talk of the success of their arms against the English, how many prisoners they had taken, etc., he looked at me, turning me round, apparently surprised at seeing me attired "en sauvage." He asked for my hair, which, the old man giving him, he carefully put by. Still my hands continued tied, and whenever I had occasion to go out, an Indian boy laid hold of the end of the rope, which he fastened to the rafters of the hut when I returned again. It was not long after this before my hands were at last unbound, my master often impressing upon me the impossibility of making my escape. I told him I had no design and feigned a satisfaction in their mode of life and a particular fondness for my new uniform, by which means I secured his good will. He thought he was

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sure of me from my being so young, and that I would on that account sooner take to the novelty of their ways of life and more easily forget my country and my friends; certain it is that with this behaviour I fared better in many respects than those prisoners who appeared always sullen and subdued, some of whom indeed suffered death on that account. I now frequently saw two of the soldiers who were taken with myself, and the meetings at intervals were very satisfactory. It gives inexpressible pleasure to meet a countryman of one's own even in a civilized foreign land. Judge then how much more so when in a state of captivity with a nation of savages of a colour so different from our own. Happy was I to meet with those poor fellows whom but a short time before I would not have suffered to speak to me without the usual marks of respect from an inferior to a superior. Now there was no distinction, we being glad to find those people of the same colour with one another. We used often to compare notes of different treatment we met with from our masters. One of them told me he was obliged to eat of Captain Robson's body. We would form fifty different schemes for making our escape, but reject them all afterwards as perfectly impracticable. About the middle of May we were in great distress from want of provisions, owing to the indolence of the savages, who never stir out of their huts to fish or hunt until necessity drives them, which was our case at this time. During four days the wind continued so high that no fish could be caught, as they durst not venture upon the lakes in their little bark canoes. These are generally navigated by two men, or by a man and a boy, the former standing in the bow or fore part, where there is a pole fixed having a light fixed at the end of it which attracts the fish—it being on the darkest side they are most successful. The man in the bow marks the fish approaching, and directs the boy to steer the canoe so that he may best strike the fish with his harpoon. In this way I have seen as much as two men could carry of cat-fish, perch, and pike taken in two hours' time, independent of the satisfaction of procuring so necessary a part of their daily sustenance. It is a great amusement and really a pleasant scene to witness fifty of the lights moving on the smooth lake in every direction, while the silence is only disturbed by the varied cries of wild beasts from surrounding forests. I have observed before that the stormy weather had reduced us to the last extremity of want, having recourse to picking up acorns in the woods, and boiling them in ashes or water, changing them frequently to take off the bitter taste; and this was our food until the fifth day, when the winds abating we obtained plenty of fish. The Indians themselves are so accustomed to be reduced to this shift that they think nothing of it, and are always sure to make up their loss by future stuffing and sloth. While they have

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victuals of any sort in their huts they do nothing but smoke, eat or sleep. It is on these occasions that the beaux and belles make their mutual conquests and dress in their best attire. They amuse themselves at times with a diversion something similar to the game of shinty which is in use among our boys, in which females play against the males, and often come off victors. My master used to deck me out in the richest manner, putting on me all the ornaments of the family, and taking me out to the plain, where he made me strut about to exhibit myself in the presence of the whole village, calling out to the people to look at the little white man. All this time I was made a show of without being allowed to join in the game. Towards the end of May we began to make preparations for our voyage to join the rest of the warriors encamped within a few miles of Detroit, for which purpose my master deemed it necessary to build a canoe, and which he and I accomplished in two days. It was of a sufficient size to carry all the family for many thousand miles. The evening before our departure I was surprised to see the master seize one of the dogs, of which animals he had several in the hut, and they were constantly poking their noses into our victuals, an operation easily performed as the floor was our only table, and neither chairs nor tables stood in the hut. This dog was killed, which I was not sorry for, and given over to the squaw, who scraped him as we do a hog in hot water. My master then invited all his neighbours, sending me round with a number of painted sticks, which were left with each one invited. Upon entering the hut where the feast is held, every one produces his stick and lays it upon the platter for the purpose. Each of the guests gets a double portion, eating one and carrying home the other in a dish which they bring with them to receive it. I sat in a corner of the hut, a silent spectator of my master's feast, being looked upon as a slave and unworthy to partake of so fine a repast. After killing or rather drowning another dog for the purpose of appeasing the evil spirit, as they gave me to understand, we set out next morning in our canoe, making short day voyages, always landing before sunset, putting up at that time our cabin and cooking our fish, which culinary office fell to my lot, as well as that of cutting firewood. The cabin or hut is soon made, it consists of about twenty trees put up in the shape of a sugar loaf, and covered all over with a sort of matting, excepting the hole at the top to let the smoke out. Every one carries his or her bed clothes upon his back, which are either the skins of a wild beast or a coarse blanket. All lie down promiscuously, men, women and children with their feet to the fire, which is in the centre. The second day of our voyage we came to an island where was an Indian burial ground. Here we halted round a particular grave, which my master afterwards told me was the grave of

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his son. He made us all plant a few grains of corn, which we did, and re-embarking, proceeded on our voyage, which we ended in four days, arriving at a Frenchman's house in the neighbourhood of Detroit. This man being my master's ——, we took up our residence close to his house, rather than join the rest of the warriors, who were encamped five miles nearer the fort. We immediately set about building a large bark house, more convenient than those they carry about with them. The fireplace belonging to it was situated out of doors, where I was condemned to broil two hours every day, boiling their kettle, with a little fish or Indian corn. This new house occupied about four days in finishing, several parts of the work falling to my share, such as carrying home the wood and bark; here I must observe that I suffered inexpressible pain from not having any clothes on—not so much as a shirt to protect me from the scorching rays of the sun which burnt my back and shoulders so much that I was one mass of blisters, the palms of my hands being in the same state from the continued working of the oar. The next piece of fatigue I was put to was assisting my mistress in planting a large field of corn or maize or other vegetables. This being finished, my master carried me to the grand encampment about five miles from Detroit. Here I had the pleasure of seeing Captain Campbell and Lieutenant MacDougall of the 60th Regiment, who came out of the fort at the commencement of the blockade, with proposals of peace to the Indians. To this however, they would not listen; but on the contrary, detained those two officers prisoners at a Frenchman's house. Upon my observing to Captain Campbell that I thought we might escape, being so near as within sight of the fort, he advised me by no means to think of it, as he was well assured that if any one escaped, the Indians were determined to sacrifice those that remained. I frequently made visits to those gentlemen who were prisoners with the Ottawahs. Every day there were captures and scalps brought into the camp. The scalp is not, as commonly believed, the whole skin of the head, but only the uppermost part of the crown, and must have in it that swirl in the hair which every one has there, before it can be approved of as a just trophy of the warrior's achievements. They at this time brought in Ensign Pauli (60th Regiment) who commanded a small fort on Lake Erie. The Indians entered this fort as friends, and while some of them were smoking a pipe as a token of their pretended friendship, the rest were butchering their small garrison till not one was left alive. This gentleman made a very good Indian, being of a dark complexion. He was much liked by his master, who soon adopted him into his family, by which he was exempted from all drudgery. So great an assembly of Indians being gathered together in a French settlement, reduced the inhabitants to great distress; they had

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their cattle, sheep and poultry killed, and when these failed we were almost being starved, having frequently nothing but a handful of corn for a day's sustenance, and that we parched in the ashes and ate it with a spoonful of bear's grease. I frequently used to beg for a morsel of bread at the French people's houses, from whose doors I was often turned away. In this distressed situation, my master prudently resolved to quit the camp, and moved accordingly back to the place where I was first taken prisoner. Here we had fish as formerly, and sometimes a little venison. On our return to the village, we halted at the burying place before mentioned, and while my mistress and I were busy erecting our hut, my master went out and killed a bear, which was eaten up heartily. After finishing our repast, I was ordered to put the kettle on the fire again, which circumstance surprised me a little, as we were in the habit of going to sleep immediately after eating. I was induced to ask the meaning, but was given to understand by looks and gestures that the mystery would be revealed on the following morning. My master then cut some of the choicest bits of the bear and put them in the kettle, which being hung over a slow fire, we went to rest. Next morning by day break we were called up, and in a formal and solemn manner walked up to the grave, where a small fire was kindled, round which we seated ourselves, and then my master arose and made a long speech, during which he often pointed to me and the grave alternately, while at every pause we all joined in a sort of chorus or amen, by way of acquiescence or approval of what he said. When he ended his oration, he divided the broth and meat among us, and after saying a few words over the grave, he put a piece of the fat of the bear into the fire, directing each of us to do the same. This I was informed was to appease the spirit of his son, who might be offended at my being adopted in his place. Such was his design, as he then told me, that I was as much his son, telling me at the same time to look upon the boys as my brothers; that my name should no longer be "Sagarast" or Englishman, but "Addick," which signifies a white elk; but notwithstanding this I was generally called by my master's name, which was "Perwash." My master, or rather my father now, took me out frequently with him hunting, an amusement of which I was very fond. Though this was not the season for killing deer, we were under the necessity of killing some for the family to subsist on when we returned to the camp near Detroit. As soon therefore, as we had cured a few carcases of venison, (which we did by smoking them without salt) we again set out to join the rest of the warriors. In crossing Lake St. Clair it happened to blow very hard, so that our little frigate was in danger of going to the bottom with Perwash and all his family. To appease the evil spirit he chewed some handfuls of tobacco and threw it

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into the lake, at the same time pronouncing a long harangue. We contrived eventually to get safe to land, but whether owing to the tobacco I shall not pretend to say. The rain having drenched our clothes and blankets, we hung them upon trees till they dried. I may mention that the Indians likewise make use of the tobacco plant in thunder storms, by throwing a quantity of it into the fire, and while it is burning a squaw drums with a piece of iron on the bottom of a kettle, which they pretend prevents any mischief being done to the family by lightning. By the time our corn was grown up about a foot high, it became necessary to have it hoed and weeded, which was a severe task to my mother and me for six days. I flattered myself that my being adopted into the family would have exempted me from this kind of drudgery, but Perwash, having a particular regard for his wife, chose that I should still assist her on many occasions, and she being fond of her ease laid the most of it on my shoulders. She frequently made me pound or bruise corn in a large mortar, till there was scarcely any skin on my hands, and when I showed them to her she only laughed, and told me I would soon be better used to it, and that in time my hands would soon become hard like hers, which in truth were none of the softest. The men think it beneath them to do anything more than fish and hunt for the support of their families, and in this they take no more trouble than is absolutely necessary, for they frequently leave the game where killed, and send their squaws to bring it home, directing them where they would find it by breaking off branches and marking the trees for miles where they have hunted and left their game; this when their squaws have found, she brings home the choicest pieces and dresses them for her lord and master who generally sleeps till called to eat. When his repast is finished he regales himself with his pipe of tobacco, mixed with the leaves of the "Shumah shrub"; in the meantime the rest of the family are busy roasting fish or broiling steaks, each one for himself. The steaks are done upon the end of a stick, as we toast bread, and in my opinion that is the most delicious way of eating roast meat. Sometimes my "mother" roasted a large piece for the family, who never wait till it is thoroughly done, but as the outside becomes a little brown, everyone with his knife falls upon it and slices away as fast as it is roasted, by which means the pleasure of eating (their chief gratification) is prolonged. When soup is made, or rather when they boil their meat or fish, they hang up the kettle out of the reach of the dog, and every one drinks out of it when inclined. They use no salt and the absence of this at first made me think every thing tasteless; but hunger and habit prevailed over prejudice, and I soon came to eat as heartily as Perwash himself. About the 8th of June, Lieutenant MacDougall, with a Dutch trader escaped into the fort, which

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caused them to look more strictly after us who were left, particularly Captain Campbell, who was shut up in a garret in a Frenchman's house. I frequently visited him, accompanied by Perwash. One morning he told me he felt ill and was prepossessed with the idea he would die very soon. I endeavoured to persuade him from indulging in such forebodings, which only tended to make him more melancholy; but to my grief and sorrow, the first thing I heard next morning was that he was killed by the savages. That morning Captain Hopkins of the Rangers had made a sortie from the fort, attacked a party of Indians and killed one of the chiefs of the nation to which I belong. The chief's friends were resolved to take the life of an Englishman of the rank of Captain. This they found convenient to accomplish by murdering poor Campbell who belonged to the Ottaway nation. The nation in their turn were enraged with the Chippewahs for slaying a prisoner who was their property, and of whom they were very fond. They therefore determined to have satisfaction for the outrage, and which they thought could not be more effectually obtained than by sacrificing a prisoner belonging to the Chippewahs of the rank equal to that of Captain Campbell. Accordingly to compensate this loss they pitched upon Ensign Pauli, but he being informed of the danger by a handsome squaw who fell in love with him, assisted by her he made his escape from the house of the Frenchman, whence with much difficulty he escaped to the fort, after being several times fired at by the sentries who took him to be a real Indian. The Ottawahs being disappointed in their design upon Pauli, determined next to take my life, being as they thought next rank to an officer and superior to any of the private prisoners among them. Perwash having heard that they were in search of me took me to a Frenchman's barn, where he covered me up with straw. In this situation I remained for the space of three hours, expecting every moment to feel the tomahawk in my skull, till a party of Indians with Perwash at their head came and conducted me away. Notwithstanding their reiterated assurance that I was not to suffer death, I could not help being alarmed and doubtful of my safety. They marched me in custody for four miles till we reached the grand encampment, which was in the midst of the French settlements. On the road lay a dead body mangled and scalped, which the dogs were eating. I was made to stop a considerable time while my guards viewed it with seeming satisfaction, telling me at the same time in exulting tones that there lay our grand chief Captain Campbell. I could not have indeed recognized in that mangled corpse the remains of my good friend whom they had murdered. It was a shocking spectacle—the head scalped, the nose, arms, ears and legs with other parts of the body cut off, yet however disagreeable to me, I was forced to behold it. They led me to a

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great hall in a Frenchman's house, in the courtyard of which were about two hundred Indians of different nations. There was placed in the middle of the hall a small table and four chairs. A fifth chair was reserved for myself, though at that time I would gladly have dispensed with the honour. They then produced some English letters, and Pondiac the leading man of the four nations, told me by a French interpreter, that as I could speak French and read English, that they had pitched upon me to explain the meaning of these letters, which he ordered me to perform without concealing any part of them, threatening me with death if I did not translate the whole verbatim just as they were. Here one of the prisoners, a native of Virginia, who fond of an indolent life, had married and determined to stay among them, told me he could read English also, and would overlook the papers to detect any attempts at concealment, or misconstruction of the sense, adding that the consequences would be my being scalped on the spot. I accordingly set to work and read the letters in French, to a Frenchman who explained them to the chief. They were merely old letters which Captain Campbell had in his pocket when killed, and a few to him from his friends at Detroit during his imprisonment, which had been committed to the charge of a Frenchman, who instead of delivering them kept them. There were several French gentlemen in the room, who were as eager to read them as the Indians. What both French and English wanted to know in particular, was whether peace had been declared with France or not. It had been publicly declared at Detroit by Major Gladwin long before that time; but the Canadians could never bring themselves to believe that the "Grand Monarque" could ever cede their country to Great Britain, and still flattered themselves that if they could excite the Indians to maintain the war against us for a little while, that a reinforcement would arrive from France and they would drive the English out of the country. They had therefore always assured the Indians that Major Gladwin had declared there was peace only to prevent them from attacking him. The epistle contained, however, nothing that I thought could favour their wishes or designs, nevertheless they thought fit to construe them differently, or at least to doubt the truth and sincerity of Major Gladwin's proclamation of peace. When I had done with the interpretation, they all thanked me and appeared satisfied with my proceedings, permitting me to return home with Perwash who said he was happy in having got me off so well.

The most memorable circumstance which happened during my captivity was my being sold to Mr. Quilleim, with whom I was well acquainted before I was taken, and had since frequently visited with Perwash in order to procure a little bread and salt. In these

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visits I proposed to Mr. Quilleim to purchase me from my master, whom I knew to be covetous and fond of riches, according to the Indian estimation of wealth, and which consists of being possessed with a profusion of trinkets, much wampum, beads, silver bracelets and gorgets. This gentleman, on account of Mr. Sterling with whom he was intimate, and whose daughter he afterwards married, was much my friend; he made several offers to Perwash for my purchase, first bringing him a horse and a cow, thinking that would prevail upon him, as he had often expressed a liking to the comforts that white people enjoyed, but he had a greater liking for me than to part with me at that price. He however, agreed to let me go for certain merchandise to the value of £40, upon condition that I was always to live with Mr. Quilleim, and not be allowed to go back to the English. This we both promised, although of course we only intended to keep it so long as it would not be attended with risk to the benefactor, for rather than he should be a sufferer I resolved to live with him, though at the hazard of being again seized by the savages. My "mother" and "brother" took an affectionate leave of me, and I went home laden with the things they had given me, and overjoyed with the change in my situation. I immediately cast away my greasy painted shirt which I had worn for two months without ever having had it washed. I scrubbed myself for two hours with soap and warm water to get the grease and paint off, then dressing myself in the costume of the Canadians, with a clean French shirt and long ruffles, and a mantle exactly like a bed gown, with a pair of new leggings, I began to feel pretty comfortable. The Frenchman with whom I was, being brother to the former commandant, and a great favourite with the Indians, (the latter had been rather civil to him in not killing all the stock, such as the cattle, poultry, etc.,) I got a good supper from him, genteelly served up, while a comfortable bed was provided for me in which I slept better than I had done for a long while before. I awoke next morning happy in the thought of being out of the hands of the savages, and once more returned to freedom, (as I imagined) never doubting that now I should have an opportunity of returning to my friends in the fort, or at least be quartered with so good a family till the war was over. With these pleasing reflections I consoled myself under the circumstances, but how fleeting are the hopes and joys of this life, and how uncertain are we weak mortals of what it may please the Almighty to make us suffer in this state of trial and probation! I was happy at this moment beyond expression, and in the next I was doomed to be miserable. Before sunset, as I was enjoying the company of the amicable Mademoiselle Quilleim, lamenting together the pitiable situation of many poor captives that were still in the hands of the Indians,

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and were contriving methods for their deliverance, a party of armed Indians entered the house, all of them Ottawahs, and unknown to me, without saying a word to any one they seized me in a rude manner and hurried me down stairs. Then, indeed, my situation wore a very gloomy aspect. I was torn away from that excellent family without having time to say farewell, while on their part they were as much amazed and confounded as myself, nor durst they make any efforts on my behalf or any attempt to save me. The ladies of the family burst into tears, crossing themselves several times, and I believe fervently prayed for my deliverance. All that Mr. Quilleim could say or do was to encourage me to keep up my spirits and place my trust in "Le bon Dieu." As we pass along the Frenchman's houses the inhabitants all expressed a compassion for me, saying what a sad thing it was to behold so young a lad come to so cruel and untimely an end; while others advised me to keep up my spirits as there still might be hope. As for myself I own I was much shocked at first, but by degrees became more resigned, and began seriously to think my time was come at last, and that the many dangers and escapes that I had had were so many warnings to me to prepare for that change which we must all sooner or later undergo. They carried me to Pondiac's hut, the chief of the Ottawah tribe, and after being left there in a state of suspense for some hours, a Frenchman was procured to act as interpreter, who informed me on the part of the chief that the reason why I was taken from Monsieur Quilleim, was because several Dutch traders had got Frenchmen to buy or rather ransom prisoners like me, and that if he suffered that trade to be carried on, they would soon have no captives left. He therefore was resolved either to retain us all or have our scalps, in pursuance of which resolve he had ordered all those that had been so bought to be brought back again, and that he had intended to keep me himself. This speech relieved me in some degree from the disagreeable apprehension I was under, and gave me cause to consider that my last hour was not so near as I had expected, but I could not but wish that I was still with Perwash. However, I remained this night with Pondiac, but early next morning the Chippewahs, the nation to whom I formerly belonged, despatched a party to take me from the Ottawahs. Their chief, Pondiac, had however, taken a great fancy to me, owing I believe, to my youth, (I being then only seventeen years of age), as they seldom grow fond of elderly people, from a notion that they will never be reconciled to their Indian manners, and he therefore positively refused to give me up, the consequences of which refusal had well nigh been a war between the two nations. This was prevented by King Owasser, the chief of the Chippewah nation, having prevailed upon Pondiac to give me up. The latter, had after a good deal of altercation

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come to this step, in order to avoid engaging in a war with a nation superior to his own, which, besides the possibility of destroying his own, would have infallibly ruined the common cause for which they had assembled. I was immediately carried off by King Owasser to his hut. He was very kind to me, and gave me plenty of food to eat, telling me at the same time that he had plenty of girls to do the work, and that I should never be desired to do anything, but should live as he and his sons did. This treatment gave me great satisfaction, and indeed the behaviour of the whole family vied with each other in showing me most countenance and favour, and when any disturbance or alarm took place in the camp, such as the young fellows out of savage wantonness, or in a drunken frolic killing any of the captives they could find, I was always concealed on these occasions until the danger was over. The old king became so very fond of me, that he offered to make me his son-in-law, when I should be disposed to marry and fancy any of his daughters, who were reckoned the handsomest in the camp, and had more wampum than any others. He was satisfied with my telling him that I felt myself highly honoured by the proposal, and although at that time not inclined to take a wife, I did not know how soon I might change my mind, and I should certainly be happy to take one of his family for a partner. Little did I suspect that the ease and tranquillity I then enjoyed should be of but transitory existence. I had not sojourned in my new situation for ten days, when Perwash, my former father, expressed a desire to have his son back again, saying that he and his wife had heartily regretted having sold me to the Frenchman, and were willing to return the merchandise exchanged for me, provided I was again restored to him, adding that it grieved their hearts to see me in the possession of another. Owasser, however great his desire to keep me in his family, knew that though he was chief of the nation, he had no power to keep another's property, nor did he choose to expose himself or his family to the revenge of Perwash, who would take the first opportunity of resenting the injury done to him. He was therefore obliged to give me up to my master, who with his whole house received me again with most expressive marks of joy and satisfaction, while that of Owasser seemed to regret my separation, the princesses themselves showing they were not indifferent. The number of prisoners now increased every day. Towards the end of July they had upwards of fifty, besides a number of scalps that were brought daily into the camp. They were every day killing some of their captives, even some of those that had been with them as long as I had. When I was in the hall of a Frenchman's house which was crowded with Indians, some of the young warriors brought in eight captives naked, into the hall, at sight of which I was surprised and terror

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struck. I enquired of an Indian of the same nation as myself, who frequently had expressed a regard for me, whether or not I was to fall a sacrifice with these they were about to murder. At this question he was amazed at seeing me here, and without making any reply, hurried me through the crowd, and putting me into another room in the house charged me to lie close, make no noise, for otherwise I should be discovered and put to death, and locking the door he left me to ruminate on what had passed. I found in the same place two Dutch merchants in a similar position as myself, having been secreted by their different proprietors, who were desirous of saving them from the fury of their country men. During our confinement we heard the Indians making long harangues over their victims, telling them it was to make their nation prosper in the war against the English that they were to be killed. The poor captives were begging the Frenchmen who were looking on to intercede for them; one little boy in particular, (a drummer of the Rangers) about eleven or twelve years old, was crying bitterly, imploring their mercy, but alas! he knew not how vain it was to ask it of butchers whose hearts were steeled against every feeling of humanity. I ventured to creep to the side of the window where I saw them lead eight of the poor captives to the river side whom they massacred on the spot. Some of them they tomahawked, others they shot with their guns, while some were put to death by making the little boys shoot them with bows and arrows, in order to accustom them to cruelty and perfect them in the use of weapons. Thus they prolonged the pain of these unhappy men, and when one would fall the multitude would set up the most dreadful yells and shouts that can be imagined. When the objects of their barbarity were all dead they proceeded to scalp them, and some of the savages took the skin off their arms to make tobacco pouches of them, as they did with Captains Robson and Campbell. The first joints of the fingers were left dangling by way of tassels. They then threw the bodies into the river that they might flow down to the fort, that their countrymen might see specimens of what they should all undergo in a short time When this tragical scene was ended, the Indian who had hidden me came and set me at liberty, first leading me publicly through the crowd to convince me that there was no danger, and then conducted me to Perwash, who seemed very glad to see me safe, he having heard that the warriors were on the hunt after me for my destruction. The following cause was given for this last act of atrocity: an old squaw, the wife of a chief, dreamt that she saw ten Englishmen slain and scalped; this she recounted to the young warriors, who wished for nothing better than a pretext to make a frolic. She conjured them at the same time to make her dream good, otherwise she prophesied, they would not prosper in

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war. This, with a good deal more enthusiastic stuff in her speech, at length excited their passions to such a pitch, that they flew about the camp like maniacs to collect their prisoners, in order to butcher them as above stated, and verify the dream of this imp of hell. However, they were in some measure disappointed, for those that had any concern for their captives, concealed them. The little drummer mentioned above was a favourite of an old squaw, who wanted much to save him, but notwithstanding her tears and most earnest entreaties, the young warriors tore him away from her, declaring upon such an occasion they would respect neither age nor sex. Almost every day exhibited fresh atrocities towards some of their prisoners, so that I lived in continual dread, expecting every day to be my last; I therefore resolved to attempt my escape at all hazards. There lived near to where we had our cabin a Frenchman named Boileau. This man had been civil to me on several occasions, and I thought might be willing to facilitate my escape by his assistance, I thereby succeeded in gaining him to my interest. As the French were permitted to enter the fort, I gave him a letter to my friend Mr. Sterling, who likewise promised him a recompense if he succeeded in my deliverance. Major Gladwin also, and several other officers assured him of their countenance. Upon his return, I found him quite ready to engage in my interest. I therefore redoubled my entreaties and promises in case of success. The next object to be considered was a plan for my departure in the most secret and unsuspicious manner. He formed many schemes, but rejected them all upon a more cool consideration of the matter. Our respective eagerness, (he to enjoy the promised reward and I to enjoy my liberty), made it difficult to determine upon the most practicable means of effecting it. However, we at last came to the following contrivance. On the evening appointed, the Frenchman was to embark in his canoe, and give out publicly he was going to fish as usual; instead of doing which he was to go about two miles down the river nearer to the Fort Detroit, and at a certain point of low land covered with bushes, he was then to put in with his canoe in the dusk of the evening, when the Indians would not perceive him and so conceal himself. I, on my part, was to make the best of my way to him in the night. This scheme we were to put into execution the evening after it was formed. This, however, was prevented for that and several succeednights, the Indians being alarmed by a report that the Chippewahs were to be attacked by our forces, which actually happened a few days after. Captain Dalzell, who had brought a reinforcement to Fort Detroit, issued from thence on the night of the 15th of August with a strong body of men under his command, with an intention of surprising the enemy's camp, but they had been warned by the French of his designs, for they

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lay in ambush and attacked his party with great spirit, nay, they did on this occasion what savages were never known to do before, they threw themselves into houses, annoying the British troops very much from them and from behind fences. The action continued doubtful for some time; at last one troop were obliged to retire, which they did in good order to the Fort, leaving upon the field Captain Dalzell and about sixty private soldiers. Perwash knew nothing of the attack till the firing of the artillery and small arms aroused him from sleep, when he rose up in a great hurry, put on a powder horn and pouch, and tied my hands lest I should make an escape and kill the women and family. Then taking his gun he ran off as fast as he could to join the rest of the warriors and his party, who were about two miles off where he lived. In about a couple of hours afterwards he returned to us, overjoyed with the success of his party, giving a most pompous description of the fight, and giving out that a vast number of the English were killed, and allowed only six Indians to have fallen. He also told me that our great chief was killed, meaning Captain Dalzell. I was then unbound and sent to another hut for a large wooden mortar to put corn in to be pounded. The Indians to whom I was sent had also been at the engagement, and boasted of their feats prodigiously. They told me they had taken out the heart of our great chief, and would soon feed on it, showing me poor Dalzell's heart roasting at the fire, pieces of the fat of which the young men took and rubbed it, in my presence, on the mouth of a poor soldier in the 60th Regiment, whom they had taken prisoner. This and other barbarous usage practised upon the prisoners shocked me so much, that I went directly to Mr. Boileau under pretence of bringing some bread to our hut, and agreed to meet him that night at the place of rendezvous, repeating my promises of reward which I engaged still further to increase. When evening arrived I lay down as usual on my bear skin to repose, putting off all my raiments, wampum, silver bracelets, collar, etc., and about the middle of the night when I guessed all the family to be sound asleep, I crawled out of the hut on all fours. When outside I stood at the door for five minutes to hear if any one was stirring, but as everything was still I thought now was my time to set off, which I did as fast as my feet could carry me to the woods. I had no other clothing but my shirt, not daring even to put on a pair of mocassins to save my feet, for had the family happened to wake they would have instantly come to the door, and if they had found me dressed they would not have been at a loss to divine my intentions. I never in my life witnessed such a night of rain, thunder and lightning. It was so extremely dark and the woods so thick and full of briars and thorns, that I was greatly retarded in my progress. I could scarcely make more than a mile an hour. I therefore resolved

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upon a new method, and quitting the woods for the river which was hard by, I waded with the water up to my chin, so that the Indians on the road could not see me. This plan would have succeeded had I had more time, but there were yet four miles to go before I could reach the rendezvous, and was in danger of being surprised in daylight. I therefore determined to take again to the woods, but was within an ace of being prevented, for just as I was going back to the bank I saw two Indians with guns, in close conference. They passed by on the road within twenty yards of me. Fortunately there was an old tree which had fallen into the river, behind which I immediately squatted, but could not completely conceal myself, so that they must have discovered me had they looked that way. If they had, I should never have got out of that place alive. This I knew and was in great apprehension, as several soldiers who had attempted to escape were caught and tomahawked on the spot. But these Indians, fortunately for me, were in close conversation, and being on a return from a feast were somewhat intoxicated. I saw them enter a little French house about one hundred yards distant. Then I immediately darted into the thicket making as little noise as possible, and to prevent the whiteness of my skin discovering me to the savages, I rubbed myself over with black moss and mire. Then pursuing my course in fear and hope, starting at every rustling of the trees, and mistaking the trunks for Indians, I at last arrived at the place appointed, and where I thought the Frenchman ought to have been waiting with his canoe, but he was not there. I ventured to call in a low voice, but nobody answered. I then began to exclaim against the perfidy of the Frenchman, who, in my desperate situation had, I thought, deceived me. Being much fatigued and exhausted I sat me down to rest, scarcely knowing what I did. My thoughts were occupied by the Frenchman's conduct, who, I endeavoured to persuade myself, would not be such a coward as to abandon me to my fate, when he knew I had to undergo the most perilous part of the enterprise. I considered too, that it was his profit also to carry the affair to a conclusion. At last, recollecting myself a little, and looking around me I discovered that my anxiety and fears had made me overlook that I was about a quarter of a mile farther up the river than the place appointed. This discovery gave me fresh vigour and spirit. I soon reached the right place, and to my inexpressible joy found the Frenchman asleep in his canoe. Having awoke him, we embarked and pushed out to the middle of the river, where we would have the advantage of the current to carry us down. We passed through the enemy's camp, making as little noise as possible with our paddles. We could plainly hear them talking, and observed a party dancing and singing round a fire. About an hour before day break we

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arrived before Detroit, and got on board a ship lying opposite. Then it was that I was agitated in a manner that I never before experienced. It would be vain to give an idea of my feelings on this occasion. I went in the morning to the Fort, where my friends were overjoyed to see me again. To be sure I cut an odd figure among civilized society, the whole town turned out to see me. My appearance certainly was calculated to excite their pity as well as laughter. I had, as before remarked, nothing but a greasy painted shirt on, my face painted red, black and green, my hair cut all away, and my skin blacked all over with the moss I had put on. My legs were so lacerated with the briars and thorns and so affected with poisoned vines, that they were swollen as big as any in His Majesty's service. Besides this, to those who inspected me narrowly, my arms presented the appearance or impressions, one of a turkey's foot, the other of a flower in pink or purple dyes. I had thus been tattooed by the savages as a mark set upon me as belonging to their tribe, and such is the indelible effect upon the part punctured, that the impression will remain as fresh through life as on the first day of the operation. Monsieur Boileau, as soon as he had put me on board the ship went back again, fearing that if he did not return home he would be suspected of having aided me in my escape, and this was the last sight I had of him. Mr. Sterling, by my orders, gave me goods to the amount of £23, which with the £39 given by Monsieur Quilleim when he bought me, amounted to £62 10 shillings, Pennsylvanian currency. After I had been about ten days at the Fort, and had recovered from all my fatigues, it so happened that a vessel had to sail for the Niagara to bring a supply of provisions for the garrison. My friend Mr. Sterling, had obtained leave of Major Gladwin to have a considerable quantity of goods brought from that place to Detroit in his vessel, and having no proper person to whom he could safely confide their conveyance he therefore applied to me. I was sensible that the bringing up of these goods would be of great advantage to the company, it being likewise at a time when several articles were wanted here, and being anxious to do what office was in my power, for the benefit of a company with which my uncle was connected, I agreed to run the hazard of the undertaking, and accordingly embarked on board the ship. We had some shots fired at us from the Huron Indians going down the river, which we returned. In four days we reached Fort Schelope, near the Falls, and marched under a strong guard to Niagara, without experiencing any annoyance from the enemy. It was late before the sloop could be laden and ready to sail again. Some artillery and provisions with about eighteen officers and men of the 17th and 46th Regiments, constituted the chief part of what we had on board. We had only set sail one day, when the vessel sprang

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a leak, and was half filled with water before it was observed. The pumps were all set agoing, but were of little use, so that after having thrown all the heavy artillery and some other things overboard, we found that the only way to save ourselves was to crowd sail to the land and run the vessel ashore; but it was the opinion of all that she would go to the bottom before this could be effected. While dread and consternation were depicted on the countenance of every one, I was surprised to find myself the least moved on the occasion, which must have been owing to my having been so much exposed and inured to danger some time previous. At a time when all were agitated in a less or greater degree, some stripping to swim, others cursing, swearing and upbraiding their companions for not working enough at the pumps, others praying, besides some who were drinking, I looked calmly on the scene, after I had become conscious I could be of no more use. When we were at the worst, and expecting every one to go down, one boat which was our last hope broke adrift; then indeed our situation was a dismal one. The cries and shrieks of a naval officer's lady with three children affected me much more than my own condition. It was really a piteous sight; the mother held two of her children in her arms, while the other little innocent was making a fruitless attempt to stop the water with her hands which was running into the cabin, and already flooded it to the depth of several inches. "She did this," she said, "to prevent the water from drowning her mamma." At last, to the inexpressible joy of all on board, the vessel struck upon a sand bank within fifty yards of the shore. The difficulty now was how to be conveyed to land, which it was desirable should be done with immediate haste, as we every moment dreaded being dashed to pieces by the violence of the surf of the lake. In this situation we should have been much at a loss, had not Captain Montresor of the Engineers, bravely undertaken to swim to shore, to endeavour to bring off the boat which had stranded there. The distance was considerable and the waves running high, and there was much danger of Indians being there on the watch; he, nevertheless, accomplished the bold adventure, and brought off the boat, by which means we all got safely on shore. Expecting the Indians would certainly come upon us, we fortified our position in the best way we could, with barrels of provisions, etc. The necessity of the measure was soon apparent, for we were soon attacked by a large body of them who had watched our movements, waiting doubtless till an opportunity offered of our being more off our guard, which, in fact we were at that moment. Several of us were walking along the beach, when we were of a sudden alarmed by the cries of the savages, which made every one take to his heels as fast as possible to gain the breastwork. I had very nearly fallen again into their hands on this

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occasion, as I chanced to stray from my companions. There was one poor soldier of the 60th Regiment who happened to be nearest the enemy. They rushed upon him out of the woods, and the first who came up to him he instantly knocked down. The second savage struck him with his tomahawk which felled him to the ground; but neither that nor the scalping deprived him instantly of life, for as soon as the Indians left him, (dead as they thought) he got up, staggering to the foot of the hill where we had barricaded ourselves. The Indians still continued to pour their fire upon us, not a man durst venture forth to bring the poor soldier up the hill, who by this time had become insensible. He paid no attention to our calls, but wandered a little further on to where the Indians had gone. We afterwards found him a corpse under an old tree. For my own part I had much to do to regain the top of the hill, being hard pressed by several of the Indians, and in my flight scrambling through the bushes, I left both my shoes in their hands, a loss I did not much regret. As soon as we arrived at our breastwork they began to fire very heavily upon us, which we immediately returned. Our work being very open and inadequate, we had several men killed. The Indians left us near dawn. We were detained in this place, which we called "Lover's Leap," for twenty-four days, as we could not get a reinforcement of batteaux to carry us off to Niagara. It was here that I first entered upon duty as private soldier. After we had quitted this position, we marched over the carrying place at the Falls just three days after the Indians had defeated our troops in a *rencontre.* We saw about eighty dead bodies, unburied, scalped and sadly mangled. When at Niagara, I determined not to attempt fortune longer in the woods, and resolved to go to New York, where after residing some time with my uncle, I proceeded to join the 42nd Regiment, in which corps I had obtained an Ensigncy, at the time when they were preparing for an expedition against the Shawanese and Delaware Indians to the westward, under General Bouquet.

NOTE.

By Thomas Rutherford, of Farrington, Roxburghshire, Scotland.

The subject of the preceding was my father. He was born at Scarborough, in Yorkshire, 1746. His father having died at Barbadoes while he was yet an infant, he was sent to Scotland to the care of his grandfather, Sir John Rutherford, who had settled there, having amassed a considerable fortune by commerce, besides being proprietor of a large tract of land which still bears his name, "Rutherford County."

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Soon after my father arrived in America he was sent by his uncle to Fort Detroit, in charge of military stores and supplies for the garrison, and having executed his commission, was about to return to New York, when he was prevailed upon to accompany an exploring party to the lakes, which set out on the 2nd of May, 1763. The account of that disastrous expedition was written by my father at Fort Detroit, immediately after his escape from the Indians, and addressed to his cousin, (Sir John Nisbet, of Dean) then at New York, who deeming the incidents of his captivity and escape sufficiently interesting to commemorate, had particularly desired to have a narrative of them in writing. After serving thirty years in the 42nd Regiment, (called the Black Watch) during which time he was engaged in both American wars, he quitted the army and retired to a small property, Mossburnford, in Roxburghshire. At a subsequent period he was appointed Major of the Dumfries Militia, under the command of the Earl of Dalkeith. He died at Jedburgh, on the 12th of January, 1830, in the eighty-fourth year of his age.

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EARLY TRADERS AND TRADE-ROUTES IN ONTARIO AND THE WEST. 1760-1783.

By Capt. Ernest Cruikshank.

(*Read, 27th February, 1892*).

The reason why I have included the "West" within the scope of this paper is that from the conquest of Canada until about the year 1816 the whole region now forming the States of Iowa, Wisconsin, and Minnesota and for a considerable portion of that time, much of the present States of Ohio, Michigan, Indiana and Illinois still remained within the "sphere of British influence," long after it had actually ceased to be British territory. During the period named, practically the entire trade of this vast territory was conducted by English, Scotch, and Canadian merchants having Montreal as their base of supplies. From 1763 to 1783, all these northwestern territories, together with Ontario, were administered as a part of the "government" or province of Quebec.

These traders acted an important part during the American Revolution and the War of 1812 and it was largely due to their active loyalty and influence among the Indians that the western provinces were then preserved from becoming a part of the United States. British garrisons continued to occupy Detroit and Mackinac until 1796 and for twenty years afterwards the isolated settlers at Milwaukee, Green Bay, and Prairie du Chien still professed themselves British subjects and proudly kept the Union Jack flying over their trading stations. As late as 1818, I find a trader described in a legal instrument as "Amable Grignon of the parish of Green Bay, Upper Canada."

The Indian tribes of this region continued to be more or less under the control and superintendence of the Indian department of Upper Canada until about fifty years ago. Many of them made annual journeys from the banks of the Mississippi to Sandwich, Ont., to receive their presents. When the celebrated Black Hawk finally surrendered, he was found to have carefully treasured a British flag, and a medal of George the Third given to his tribe half a century before.

The conquest of Canada at once transferred the trade of the province and the vast interior country to the North and West from the hands of the French to those of English traders. Successive governors of Canada

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had actively exerted themselves to confine the English colonists to a comparatively narrow strip of land along the Atlantic seaboard while they jealously retained the commerce of the great country behind, almost exclusively in their own hands. In this policy, they had been so far successful that in 1756 they held a chain of forts extending from Montreal to the foot of the Rockies. The posts of Presqu' Isle, Le Boeuf, Venango, Du Quesne, commanded the navigation of the Ohio. They had stations on the Chicago, St. Joseph's, Wisconsin, Wabash, and Illinois Rivers which quite monopolized the trade of the surrounding country. Thriving settlements of long-standing at Kaskaskia, St. Louis, New Orleans, and elsewhere on the Mississippi gave them full control of that mighty river. They had establishments at Prairie du Chien and Lake Pepin in Wisconsin. Pascoya on the upper Saskatchewan was 900 leagues beyond Mackinac and the journey usually occupied three months. Their most western post was still 100 leagues beyond Pascoya. La Verendrye, Le Gardeur de St. Pierre, De Niverville and other bold adventurers had explored the adjacent country. Determined efforts were made to wrest the trade of the Northern Indians from the Hudson's Bay Company. The northern shore of Lake Superior and the rivers falling into the Lake from that direction were thoroughly explored. An expedition fitted out at Mackinac ascended the Michipicoton or Pijicic River as far as they could go; hauling their boats overland to the head of Moose River they dropped swiftly down that stream and took the principal British factories on James Bay by surprise. They returned by the same route with their booty and when the French flag was finally lowered at Mackinac, two small cannon were found there which had been taken in this daring raid.

It is still possible to ascertain pretty closely the extent and value of their trade as it existed in 1754 just before the final struggle began. The Indian country had been mapped out into districts, and traders were strictly prohibited from passing the limits of the district for which they obtained licences. They were also forbidden to carry spirits except for their own use or to sell any to the Indians. Each trader was required to report at the post of his district before going out to trade and again on returning. The commandant of this post heard the complaints of the Indians and if they appeared well founded, promptly redressed their grievances.

As Sir Guy Carleton remarked, "They did not depend on the number of troops, but on the discretion of their officers, who learned the language of the natives, acted as magistrates, compelled the traders to deal equitably, and distributed the King's presents; by this conduct they

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avoided giving jealousy, and gained the affections of an ignorant, credulous, and brave people whose ruling passions are independence, gratitude, revenge, with an unconquerable love of strong drink which must prove destructive to them and the fur-trade if permitted to be sent among them; thus managing them by address where force could not avail, they reconciled them to their troops and by degrees strengthened their posts at Niagara, Detroit, and Michilimackinac."

Ninety canoes were annually permitted to go to the southern posts. These were Niagara, Toronto, Frontenac, La Presentation, Detroit, Ouias, Miamis, Michilimackinac, La Baye, St. Joseph, Illinois, and their several dependencies. Twenty-eight canoes were despatched to the northern posts which were Temiscamingue, Chagouamigon, Nipigon, Gamanistigouia, Michipicoton, Mer du Ouest, Rivière des Kikipoux, Lake Huron, and Belle Rivière.

Post.		Garrison.				
Niagara	5	Officers.	30	men.	10	Canoes.
Toronto	1	"	7	"	5	"
Frontenac	3	"	17	"	2	"
Detroit and dependencies	4	"	28	"	17	"
Michilimackinac and dependencies	2	"	15	"	25	"
La Baye and dependencies	1	"	5	"	13	"
St. Joseph	1	"			5	"
Illinois					8	"
Temiscamingue						
Chagouamigon	1	"			4	"
Nipigon	1	"			5	"
Gaministigouia, Michipicoton	1	"			9	"
Mer du Ouest	1	"	6	"	9	"
Rivière des Kikipoux					2	"
Lake Huron					2	"
Belle Rivière					2	"

The average value of each canoe was estimated at 7000 *livres*. Toronto and Frontenac were called the King's Posts.* The trade there was conducted for the benefit of the Crown and the furs so obtained were sold by public auction in Montreal. Toronto in particular was founded with the express object of drawing trade away from the English post of Choueguen or Oswego. About two-thirds of the entire Indian trade, it will be

*In addition to those posts Kalm's map indicates the out-stations of Gandalskiagon apparently on the present site of Whitby, and Redcharle between Niagara and the mouth of the Genesee.

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noticed, was carried on with the tribes of the Far West. For many years the determined hostility of the Six Nations had hindered the French from the free navigation of the great lakes, but they then had several small ships of war on each of the lower lakes and an unarmed schooner upon Lake Superior. All of these vessels were frequently employed in transporting goods between the principal posts.

Ample justice has been done to the great skill manifested by so many Frenchmen in the management of primitive people. "No other Europeans" says Merivale, "have ever displayed equal talents for conciliating savages or it must be added for approximating to their usages and modes of life." But truly remarkable as was the ascendancy acquired by Gautier, Langlade, La Corne and others, it is doubtful whether they ever possessed as great and permanent an influence among the Indians as Johnson, Butler, McKee, Elliott, or Dickson.

It is probable that few of the water-ways, *portages*, and paths used by the Indians remained unknown to the hardy and adventurous *Coureurs des Bois*. But their knowledge was jealously kept secret and much of it perished with them. Consequently after the conquest, land and water-routes formerly well known to the French, had to be re-discovered or at least re-explored by their successors. During the war too, many of the less important trading-stations had been abandoned or destroyed.

The old and favorite canoe-route from Montreal to Lake Huron by way of the Ottawa, Lake Nipissing, and French River although interrupted by no less than forty-two *portages* and *decharges* had never fallen into disuse, but four trading-houses upon the Ottawa alone had been recently abandoned and were already crumbling to ruin. One of these was 14 leagues above the Longue Sault, one three leagues higher at the mouth of Hare River, another at Isle des Allumettes, the fourth at the Rivière du Moine. A short portage connected a branch of the Ottawa with the Cataraqui and Lake Ontario.

Missionary, soldier, and trader had traversed in succession the route from the Bay of Quinté by way of Balsam Lake and Lake Simcoe to the once populous country of the Hurons. The more direct route from Toronto to Lake Simcoe was also frequently used in the latter days of the French occupation.

From Burlington Bay the Indians used a *portage* into the Upper Thames and another from the forks of that river into Lake Erie at Point aux Pins. Three well defined trails led from different points on the Grand River to Lake Ontario, and there was also a *portage* less than five miles in length from that stream into the Chippawa. The carrying-

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place at Niagara Falls lay on the eastern bank of the river and was about nine miles long. Block-houses guarded the wharves at the landings, the lower being called Petite Marie; the upper, Little Niagara. Windlasses were used for hoisting heavy weights up the heights and also for assisting vessels to overcome the rapids at Fort Erie.

From Lake Erie the French made their way at an early date to Lake Chautauqua, thence down the Venango into the Ohio, but this route was soon abandoned for the shorter and easier one from Presqu' Isle (Erie) to French Creek. Here they made so good a road that heavy cannon were easily hauled over it in the days when they held Fort du Quesne. The forts they had built at Presqu' Isle, Venango, and Le Boeuf were taken and destroyed by the Indians during Pontiac's war. They were not rebuilt, the route became disused, and the road soon fell out of repair.

There were three other much frequented water-routes from Lake Erie to the Ohio. A *portage* of a single mile connected the headwaters of the Cuyahoga with the Muskingum; another four miles in length united the Sandusky with the Scioto. The carrying-place from the Miami of the Lakes to the Great Miami was nine miles long, and a branch of the former river interlocked with a branch of the Scioto. In the region watered by these rivers the fiercest struggle for trade had been waged and here those inevitable collisions occurred which precipitated the conquest. About three hundred English traders annually came over the mountains from Pennsylvania and Virginia. They usually ascended the Susquehanna, Juniata, or Potomac to the head of boat navigation and then made their way through the gaps of the hills to the nearest branch of the Ohio. Many of the Indians living in the vicinity were emigrants from the English colonies who had settled there with the permission of the Six Nations by whom they were treated as allies or "younger brothers." From the first they were inclined to be friendly to the English and regarded the French with suspicion. One English factory was established far up the Muskingum, another at Shannoah (Shawnee-town) near the confluence of the Scioto with the Ohio, but their principal mart and place of trade was at Pickiwillany (Piqua) on the upper waters of the Great Miami. From these posts, individual traders driving pack-horses before them made their way to the different Indian settlements. As early as 1749, De Bienville reported that every village on the Ohio and its tributaries had one or more English traders in it and that each of these had men employed in transporting their furs. Raymond, the Commandant of the French post on the Miami of the Lakes, at the same time described the feeling of the Indians as decidedly hostile to his countrymen.

The Six Nations claimed the sovereignty over the country on the

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south side of Lake Erie as far west as the Sandusky River. They held it solely as a hunting ground, making no attempt at a permanent settlement. They also claimed the lands on either side of the Ohio from its source to the mouth of the Wabash. The Delawares, reduced to less than 500 warriors had taken up their residence on the Muskingum, and the Shawanese, another allied tribe, numbering 300 fighting men, were seated on the Scioto. Neither of these tribes raised much grain. They maintained themselves almost entirely by hunting in which they were very expert. The Wyandots (frequently called Hurons) occupied a very fertile tract of land on the Sandusky River. The number of adult males was variously estimated at from two to six hundred. Their villages were composed of regularly framed houses neatly covered with bark. They were considered the richest and most industrious Indians on the continent. Mr. McKee told Governor Simcoe that when he first became acquainted with these people (about 1750) they would frequently change their dresses eight or ten times in the course of an evening, when holding one of their grand dances, and that each dress was so loaded with ornaments as to be valued at £40 or £50. They bred many horses, black cattle, and hogs and grew great quantities of grain not only for their own use but for the supply of the neighboring tribes that preferred to employ themselves entirely in hunting.

In 1752, Charles de Langlade at the head of a band of Chippewas destroyed the English factory at Pickiwillany and the remaining traders were soon chased from the Ohio valley. The neighboring Indians then passed for a few years under French influence, but never seem to have become actively hostile to the English. When the war was over, the trading-posts were not re-established, as the Indians could be easily supplied from Pittsburg or Detroit.

This province as far north as the borders of Lake Michigan was frequented only by roving bands of Missassaugas who seldom remained long in one place. At the date of the conquest, their principal village seems to have been near the present site of Toronto.

A remnant of the Hurons, Christianized and superintended by a French missionary, was settled opposite the village of Detroit.

The French inhabitants of Detroit already numbered about 2500. The settlement extended seven or eight miles on both sides of the river, and was in a flourishing condition. The settlers grew a considerable quantity of grain and bred many cattle but they devoted their attention chiefly to the fur-trade which was great and lucrative. Tribes of the Ottawa Confederacy numbering about 900 warriors had their villages in the immediate vicinity.

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From Detroit the favorite route to the Illinois and the Mississippi was by the Miami of the Lakes and its tributary the Au Glaize, from which there was a portage of twelve miles to the Wabash. The distance to Fort Miamis on the Au Glaize was 216 miles. A few French and half-breed families occupied a deserted fort, and the Miami village opposite could turn out 250 fighting men. Thence to Ouias or Ouiatanon, hard by a populous Kickapoo village with the principal town of the Ouias (Weas) directly opposite, was 183 miles of rather difficult navigation. Vincennes, 240 miles further down the Wabash, had long been an important station. A trading-house had been established there in the same year that Penn had founded Philadelphia. The permanent population of the French village did not exceed four hundred persons, but the Indians for a great distance around constantly resorted to this place for their supplies and trade was brisk. The distance by land across the prairie to the Illinois was estimated at 240 miles.

Much shorter but less frequented was the land-route from Detroit to Fort St. Joseph on the river of the same name, situated close beside a village of 200 Ottawa warriors and another of 150 Pottawatomies. From this place there was a portage of four miles to the Kankakee, a branch of the Illinois. The distance by water to the Mississippi was 541 miles. There was a second portage from the St. Joseph to the Wabash. The Chicago river was connected in a similar manner with another branch of the Illinois. All of these routes were much used by the Mackinac traders.

The French settlements on the Illinois were flourishing and populous. As early as 1750, Père Vivier had estimated their population at 1100 whites, 300 negro and 60 Indian slaves. At the date of the conquest it was believed to have increased to 2050 whites and 900 negroes, but many soon afterwards elected to follow the French flag across the Mississippi rather than submit to English rule. In 1765 the geographer Hutchins stated that Kaskaskia had a population of 500 whites and 400 or 500 negroes; Prairie du Rocher, 100 whites and 80 negroes; Cahokia, 300 whites and 80 negroes.

The station of Michilimackinac, situated on the western shore of the straits of the same name, was the distributing point for the trade of the farther west and northwest. It had been shrewdly built on the very boundary line between the territories of the Ottawa and Chippewa Indians, so that when these two nations came to trade, each could encamp on its own lands within a stone's throw of the stockade which stood so near the water's edge that the waves frequently dashed against the palisades. The Jesuit mission of St. Ignace and about thirty houses

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stood within. Twenty miles to westward lay the Ottawa village of L'Arbre Croche having a population of fifteen hundred Christian Indians principally engaged in agriculture. In fact the traders of the post were wholly dependent upon them for provisions both for their expeditions into the fur-country to the west and north and when returning to Montreal.

A number of French families had already taken up their permanent residence on Green Bay near the mouth of the Fox river where they cultivated small farms and gained a comfortable living by selling their surplus products to passing traders. The Fox and Wisconsin rivers afforded an easy and tolerably direct passage to the Mississippi.

The principal village of the Winnebagoes or Puants stood on an Island in the lake to which they bequeathed their name. The capital of the Sacs on the Wisconsin river was described by Carver as the largest and best-built Indian town he had ever seen in the course of his extensive experience. It consisted of about ninety houses, each of them large enough to shelter several families, built of hewn plank neatly jointed, and covered so securely as to be proof against the heaviest rains. The streets were regular and spacious. The inhabitants tilled their gardens energetically and grew such quantities of corn and vegetables that this was considered the best market to purchase provisions of any within several hundred miles. The male population of the tribes between Green Bay and the Mississippi was not believed to exceed 1200, divided in the following proportions.—Menomonees, 110; Folles-Avoines, 100; Winnebagoes or Puants, 300; Sacs, 300; Foxes, 320.

An Indian village of almost three hundred houses occupied the site of Prairie du Chien and a considerable number of French traders made it their head-quarters. The neighboring tribes and even those living on the most remote branches of the Mississippi annually assembled there about the end of May with the furs they had obtained during the winter. A general council of the chiefs was then held to determine whether they should sell their peltry to the traders who came there to purchase or take them to the French posts in Louisiana.

All of the smaller trading-stations to the north and west of Mackinac had been abandoned during the war except one occupied by J. B. Cadotte at Sault Ste. Marie.

The Ottawas and Sioux and the Indians of Wisconsin generally, remained firmly attached to the French interests and it was from these hardy and warlike tribes that they obtained their most efficient auxiliaries. Picked bands of these Indians had defeated Braddock on the

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Monongahela and participated in the French triumphs at Oswego and Lake Champlain.

The number of Indians living to the north of Lake Superior and Huron was vaguely estimated at 12,000 fighting men, chiefly Saulteaux and other clans of the great Ottawa Confederacy. Those about Lake Nipissing, frequently termed the Lake Indians, were conjectured in the same loose way to amount to half that number, but very little was known about them as they had scarcely any commerce with the whites. They had no fire-arms and seemed to have no intercourse of any kind with other tribes. Rogers said that they appeared "to live as independent as if they had a whole world to themselves."

Traders from the English colonies hastened to occupy the new channels of trade suddenly opened to them by the fortunes of war. They followed hard on the heels of the victorious armies and sometimes even preceded them.

When on his way to Detroit in 1761, Sir William Johnson found that a storehouse had already been built at the upper landing on the Niagara by Rutherford, Duncan & Co, who were preparing to monopolize the carrying-place around the Falls under authority of a permit from General Amherst. They had discovered a large quantity of hand-sawn plank left by the French in the Chippawa Creek and were using it to build a small vessel for the purpose of exploring the unknown shores of the upper lakes.

Other merchants established themselves at Oswego where for a few years they carried on a greater Indian trade than at any other place on the continent.

One of the first English merchants to make his way to the Lake Superior country was Alexander Henry who published an account of his early travels in 1809. In 1760, he accompanied General Amherst's army in its advance upon Montreal, taking with him three boats loaded with merchandise. By singular ill-luck or mismanagement all his boats were swamped in attempting to run the rapids at the Cedars and he lost his entire stock. Undismayed by this disaster Henry immediately hurried back to Albany and secured a fresh supply. This was quickly sold at Fort Levi. Tempted by dazzling tales of the ease and rapidity with which fortunes were made at Mackinac, the great fur-market of the west, he resolved to go there next year. Even then he was not destined to be first in the field, for General Gage had already granted a passport for that place to Henry Bostwick, and it was with difficulty that he was persuaded to issue another as the French posts west of Detroit had not yet been

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surrendered and the Indians were reported to be very hostile to the English. Henry's persistence finally triumphed, and early in the spring of 1761 he set out on his journey, with several large canoes heavily loaded. Following the Ottawa route he reached Mackinac several days in advance of a body of soldiers sent from Detroit to take possession of the fort. He found Mr. Bostwick already there and their lives seem to have been in some danger until the troops arrived. Detachments were immediately sent to occupy St. Joseph's, Green Bay, and Sault Ste. Marie, but as the public buildings at the latter place were accidently burnt soon afterwards, its garrison was withdrawn.

When Mackinac was taken by the Indians, Henry, Bostwick, Ezekiel Solomon, (another English merchant) and about three hundred French Canadian *Voyageurs* and others were made prisoners. A Mr. Tracy was the only English trader who was killed on that occasion. The small garrisons at St. Joseph's and Green Bay were next compelled to surrender. In this extremity, Cadotte of Sault Ste. Marie proved himself a true friend to the English. He dissuaded the Chippewas of Lake Superior from joining Pontiac and used his influence to obtain the release of the prisoners. Henry was sent by way of Lake Simcoe and Toronto to Niagara where he arrived in time to accompany Bradstreet's avenging army to Detroit, in command of a small party of friendly Indians.

In 1765, a regulation was adopted prohibiting all white men from trading to westward of Detroit without a license and Henry's perseverance was rewarded by the monopoly of the trade of Lake Superior. He seems to have had no ready money, but he promptly bought four freighted canoes at twelve month's credit for 10,000 pounds of beaver. This fur was then worth 2s. 6d. a pound. At Mackinac the value of every commodity was reckoned in pounds of beaver. Manufactured goods of every kind brought fabulous prices. A stroud blanket was valued at ten beaver skins; a trade-musket at twenty; a pound of powder or a two-pound axe at two; a knife or a pound of ball at one. For a shirt, Henry had shortly before paid ten pounds of beaver and fifteen for a pair of leggings. Even when a man went to the garrison-canteen, he took with him a marten skin (worth 1s. 6d.) to pay for his drink.

Henry took Cadotte into partnership and apparently put the trade of Sault Ste. Marie and the north shore into his hands. He next engaged twelve boatmen at one hundred pounds of beaver each for the season, and bought for their provision fifty bushels of Indian corn for ten pounds of beaver a bushel and the customary allowance of tallow at a dollar a pound. Upon arriving at Chagouamigon (or Chequamegon) Bay, where the French had formerly a trading post upon an island, he found the

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Indians destitute and almost naked, and was obliged to advance them at once goods to the value of 3000 beaver-skins. The result of the winter's trade was 150 packs of beaver weighing a hundred pounds each and twenty-five packs of otter and marten.

In his second venture, he advanced to each male Indian, goods valued at one hundred pounds of beaver and to each woman, thirty pounds worth. As a proof of the remarkable honesty of these people, he relates that although he had advanced to them at this time goods to the value of two thousand beaver-skins, not more than thirty skins were unpaid in the spring, and that this loss was due to the death of an Indian whose family brought in all the furs he possessed and offered to pay for the remainder.

Upon again returning to Mackinac, he made the acquaintance of Mr. Alexander Baxter who had come from England to examine the deposits of copper ore on Lake Superior and he threw himself with his accustomed energy into this mining project. A company was soon formed, composed of the Duke of Gloucester, Hon. Charles Townshend, Sir Samuel Tutchet, Mr. Baxter, the Russian consul in London, and Mr. Cruikshank in England and Sir Wm. Johnson and Mr. Alex. Baxter in America. In 1770, Mr. Baxter returned from England with the necessary authority to begin operations. Bostwick and Henry were next taken into partnership, probably to make use of their local knowledge and influence. During the winter they built a barge and a sloop of forty tons at Point aux Pins near Sault Ste. Marie, and in May, 1771, they sailed with a party of miners for Ontonagan where they built a house and opened a mine. The miners were left there during the winter and in the following spring a boat was sent to them with a supply of provisions. On the 20th of June, it returned with the entire party. The mine had suddenly caved in and they had failed to find silver ore in paying quantities. In August of that year they began working a vein of copper on the north shore and during the season of 1773 penetrated about thirty feet into the rock. The vein then rapidly diminished in size and was abandoned. This failure combined with the high price of labor and provisions and the difficulty of obtaining mining supplies thoroughly disheartened the English shareholders and they declined to proceed.*

During these years Henry had continued to trade with the Indians of Lake Superior but he soon determined to seek the new and promising field of trade in Canadian Northwest.

*General Gage remarked that "their want of success was not so much owing to the mismanagement of their agents as to want of foresight in providing the necessities requisite for such an undertaking the want of which at that immense distance must have overturned their scheme at once."—*Letter to Captain Vattas, 26th December, 1773.*

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A trader whose name I have not ascertained had sent several canoes as far as Rainy Lake in 1765. The Indians there having been without supplies for several years, detained and plundered them. He repeated his attempt the next year with the same result. With astonishing perseverance he fitted out a third expedition in 1766 and was rewarded with success. Leaving part of his goods at Rainy Lake to be traded out among the Indians there, he was permitted to proceed with the remainder beyond Lake Winnipeg. Other traders soon followed in his footsteps. In 1769, the brothers Frobisher formed a partnership with Todd and McGill of Montreal for the purpose of prosecuting this trade on a large scale. The Indians of Rainy Lake were not yet entirely conciliated and plundered their canoes, but before they were informed of this disaster, their supply of goods for the next year was at the Grand Portage and they were in a manner forced to proceed. Their second venture was successful and they reached Lake Winnipeg in 1770. The partnership was then enlarged and to borrow their own words, "having men of conduct and abilities to conduct it in the interior country, the Indians were abundantly supplied and at the same time well treated, new posts were discovered as early as the year 1774, which to the French were totally unknown, and had we not been interrupted by new adventurers the public in the course of a few years would have been well acquainted with the value and extent of that country."

Cadotte and Henry may probably be classed among these new adventurers. Their first expedition to the northwest of Lake Superior was undertaken in 1775. When crossing Lake Winnipeg they fell in with Peter Pond, Joseph and Thomas Frobisher, and Mr Paterson of Montreal, all bound for the mouth of the Saskatchewan. The united fleet numbered thirty canoes manned by one hundred and thirty men. At Fort Cumberland they separated, Pond going to Fort Dauphin, Cadotte to Fort des Prairies with four canoes, and the Frobishers and Henry to the Churchill River with ten others. Four different interests were then struggling for the trade of the Saskatchewan Valley but they soon combined to keep up prices. A trade-musket was valued at twenty beaver skins; a stroud blanket at ten; a white blanket at eight; a one pound axe at three; half a pint of powder or ten bullets at one. Their greatest profit was however made from the sale of knives, beads, flints, awls, and other small articles. Henry charged his rivals, the factors of the Hudson Bay Company, with practising many gross impositions upon the natives, such as the sale of prints for charms and sugar and spice as medicines.

Trade was remarkably brisk and lucrative. During the winter of

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1775-6 from twenty to thirty Indians daily arrived at Henry's station on the Churchill loaded with the finest quality of furs, and in the following June, he purchased 12,000 beaver skins in three days.

Major Robert Rogers, the celebrated partisan, was one of the first English colonists to explore the country around the great lakes, and while in command at Mackinac he appears to have dabbled in the enticing fur-trade. As early as 1765, he published a small book entitled "A concise account of North America."

Stating his qualifications as an authority on the subject in the preface, he said: "This River (the St. Lawrence) I have traced and am pretty well acquainted with the country adjacent to it as far up as Lake Superior, and with the country from the Green Bay to the Mississippi, and from thence down to the mouth of the Mississippi at the Gulf of Mexico. I have also travelled the country adjacent to the Ohio and its principal branches and that between the Ohio and Lakes Erie and Michigan and the countries of the southern Indians."

Jonathan Carver, a New Englander, wrote an interesting narrative of his travels in the West during the year 1766-8. Furnished by Major Rogers with a letter of credit on some English and Canadian traders who were going to the Mississippi he left Mackinac on the 3rd of September, 1766, and reached La Baye on the 18th. The fort at that place as well as the one at St. Joseph's had been abandoned since Pontiac's war and was fast falling to ruin. He stayed there two days but arrived at the Winnebago town on the 25th. Eight days paddling brought him to the carrying-place, leading to the Wisconsin from whence he gained the Mississippi by easy stages. At Lake Pepin, he noticed the ruins of St. Pierre's deserted station. He ascended the Mississippi to the mouth of the St. Pierre and went up the latter river about two hundred miles. French traders from Louisiana had been among the Indians in this quarter telling them that their French father would soon awake and he was shown belts of wampum conveying this message that they had delivered. After returning to Prairie du Chien for supplies, he again went up the Mississippi to the Chippewa which he ascended as far as he could go. He then carried his canoe into a stream flowing into Lake Superior which he named Goddard's River in honor of a well-known Montreal merchant, James Stanley Goddard, who had rendered him some assistance in the course of his journey.

He next visited the Grand Portage where he learned that those who went on the northwest trade were obliged to convey their canoes and baggage overland about nine miles to a chain of small lakes, and relates

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that they were in the habit of resorting to Fort La Reine on a river flowing into Lake "Winnepeek" to trade with the "Assinipoils." Coasting along the north shore of Lake Superior and Huron he made his way back to Detroit.

Louis Chevalier, a French Canadian trader, who had acquired great influence among the neighboring tribes continued to reside at St. Joseph's until removed by force during Revolution. His establishment then numbered fifty men, women, and children. By turns trusted and suspected, Chevalier appears on the whole to have been faithful to his allegiance during the contest. Like many others of his calling he had taken an Indian wife and one of his half breed children, Amable Cheyalier, rendered important service during the war of 1812.

A member of the noted Lorimier family had a trading-house for many years near the portage from the Miami of the Lakes which became a favorite halting-place for war-parties from Detroit in their raids upon Kentucky. Loraine, La Motte, Richardville, and many other unlicensed traders were permanent residents of Ouiatenon and Vincennes. As at Detroit, most of the inhabitants at those places subsisted by the fur-trade. The furs obtained at Ouiatenon were supposed to be worth £8000 annually. The exports from Vincennes were estimated at £5000. Among the English at least, these settlements had an evil reputation. Croghan in 1765 terms the inhabitants "an idle lazy set, a parcel of renegades from Canada, much worse than Indians." Sir Wm. Johnson five years later speaks of them as "that lawless colony of the Wabash who are daily increasing in numbers and whilst they particularly hate us as English are really enemies of all goverment." Making due allowance for national prejudice these estimates of their character seem fully justified by their contemptible conduct during the Revolution.

The trade of this region however was not undisputed. The merchants of Detroit complained that in 1765 when they were prohibited from going among the Indian villages for fear of renewing their hostility, French and Spanish traders from the Mississippi had come within sixty miles of Detroit and carried off furs for which they had already advanced goods the year before. At the same time, Mr. Fraser who had been sent to take possession of Kaskaskia, found the shops and most of the houses at that place crammed with goods from New Orleans. The merchants in general protested vigorously against any regulations that would prevent them from going among the different tribes, and urged that if these were enforced they would have the effect of diverting the trade from the St. Lawrence and turning it down the Mississippi. Besides the French and Spanish they sometimes had to compete with enterprising English traders

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from the southward who were neither hampered by moral nor legislative restraints. An item in the Annual Register for 1767 informs us that "Messrs. Ferguson and Atkins, two Indian traders had lately returned (to Mobile,) from a town eleven hundred miles up the great river Mississippi where they had each married the daughters of an Indian chief and thereby established a mart for beaver's fur, deerskins, &c., from which great advantages were expected."

On the other hand, Sir William Johnson in the light of long personal experience as a trader insisted earnestly on the necessity of regulating the traffic. His correspondence abounds with complaints "of the irregularity with which trade is conducted through the want of sufficient powers to regulate it." The picture he drew of the conduct and character of many of the traders is unpleasing but instructive. "When the Indians are assembled on public affairs," he wrote to the Earl of Hillsborough on the 14th Aug. 1770, "there are always traders secreted in the neighborhood, and some publicly, who not only make them intoxicated during the time intended for public business but afterwards get back the greater part of their presents in exchange for spirituous liquors, thereby defeating the intentions of the Crown and causing then to commit many murders and disorders as well among the inhabitants as themselves." In a speech addressed to him on the 4th of March, 1768, the Indian spokesman had said:- "the rum-bottles hang at every door to steal our lands and instead of the English protecting us as we thought they would do, they employed superior cunning to wrong us; they murdered our people in Pennsylvania and Virginia and all over the country, and the traders begin more and more to deceive."

Again in 1772, Johnson wrote:—"The Indians complain of the great cargoes of rum which of late in particular are sent among them to their ruin as they call it, and beg that it may not be suffered to come near their castles or hunting-grounds. . . . . The complaints made daily by the Indians of the abuses and irregularities of trade are many and grievous and doubtless will be made use of by them in case of a defection in any quarter. . . . . The common traders or factors who are generally rapacious, ignorant, and without principle, pretending to their merchants that they cannot make good returns unless they are at liberty to go where and do as they please. . . . . They are daily guilty of the most daring impositions. . . . . Most of these evils result from the rapid intrusions on Indian lands and the unrestrained irregularities in trade to which I see no period from any steps that are likely to be taken in the colonies."

These complaints referred particularly to the older provinces where

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the legislatures declined or neglected to impose regulations, and he congratulated Sir Guy Carleton upon the general absence of these abuses in his government. But unlicensed traders found their way into Canada and Johnson asserted that some of the French Canadian traders were disloyal and were inciting the Indians to hostilities. Canadian merchants whom Carleton consulted denied the charge indignantly, and instanced the general good conduct of their countrymen during Pontiac's war as a proof of their trustworthiness.

In response to many urgent appeals, on the 15th of April, 1768, Lord Hillsborough at length addressed a circular to the Governors of all the British Provinces in America in which he said:—"The objects which upon this occasion will principally demand the attention of the several colonies are to provide by the most effectual laws for preventing any settlement being made beyond the line which shall be agreed upon with the Indians and for the control and punishment of those atrocious frauds and abuses which have been practiced by the traders and have been one principal cause of the disaffection of the savages."

These apparently reasonable and prudent recommendations were either ignored altogether by the local legislatures or resented as an improper attempt to interfere in their local affairs, and five years later his successor, Lord Dartmouth, confessed his utter helplessness to afford a remedy. "As the colonies," he said, "do not seem disposed to concur in any general regulations for Indian trade I am at a loss to suggest any mode by which this important service can be otherwise provided for than by the interposition of the Supreme Legislature, the exertion of which would be inadvisable until truth and connection have removed the unhappy prejudices which have so long prevailed in the colonies on this subject." In the eyes of the typical American historian, a British minister is always the haughty noble, always stupid, always selfish, always insolent. The colonist to whom his policy proved obnoxious is as inevitably the pure patriot, intelligent, firm, and honest. It is not surprising then that this feeble attempt to protect the Indians should often be enumerated among the crimes of a wicked ministry and the worst of motives assigned for it.

Even in Canada the regulations of the governor were systematically evaded and disregarded. This unfortunate state of affairs culminated in the wanton and brutal murder of several Indians among whom were a woman and a child, on the north shore of Lake Erie by a trader of the worst reputation named Ramsay. The murderer was arrested and sent down to Montreal for trial, but after long confinement, had to be released for lack of evidence.*

*For Ramsay's own version of this affair *vide* P. Campbell's travels.

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The frontiers of New York and Pennsylvania swarmed with *bos-lopers* (bosch-loopers) the Dutch counter-part of the reckless *coureurs des bois*. The excitement and uncertainty prevailing in all the colonies encouraged them in their defiance of the officers of the Crown and prevented punishment of their crimes.

The Revolution followed and the occupation of Montreal for several months by the Americans in 1775-6 materially dislocated the trade of the province. The adhesion of the western Indians with a few exceptions to the Crown had the effect of cutting off all trade with the settlements south of the Lakes, and the posts of Niagara, Detroit, and Mackinac became of more consequence than ever.

Charles de Langlade and his nephew Gautier de Verville once more led the Indians of the Northwest to the relief of Montreal. They were ably seconded by De Quindre, La Motte, La Bute, and other French Canadians. Alexander McKee and Matthew Elliott, traders of long experience and marked ability, fled from Pittsburg to Detroit where they were at once employed by the Lieutenant-Governor in the Indian Department. Both of them soon acquired an extraordinary influence among the tribes in the vicinity which they retained during the remainder of their lives.

Other traders like Godefroy de Linctot, Hammelin, and McCarty joined the Revolutionary party, but their efforts among the Indians had slight success.

In May, 1777, instructions were issued by the Governor to permit no vessels or boats except those of Indians to navigate the Lakes without satisfactory passports, and prohibiting the construction of any vessel larger than a common rowboat. All vessels already afloat were to be taken into the public service. To compensate the merchants as much as possible for the loss and inconvenience they must necessarily sustain from this arbitrary measure, the commanders of these vessels were instructed whenever possible to assist in transporting their goods free of charge, merely taking an acknowledgement from the owner for the service performed. In the autumn of 1779 when Niagara was threatened with an attack, passes were refused to everybody.

Yet side by side with the military operations, in spite of all restrictions and obstacles, the trade went on with undiminished energy.

A memorial from "the merchants and traders from Montreal to the great carrying-place in Lake Superior and the interior country commonly named the North or Mer de Ouest" presented to General Haldimand in May, 1780, estimated the annual returns from their operations in that

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part of the country for a number of years previous at £50,000 worth of furs. They stated that 300 men were employed by them who usually returned to Grand Portage from the interior between the 10th of June and the 15th of July to deliver their furs and receive supplies for the next year. They had not been permitted as in former years to purchase provisions of any kind for the use of these men at Mackinac and Detroit in the autumn of 1779 owing to the increased demands of the garrison and Indians and consequently were obliged to send everything from Montreal, a distance of 1350 miles to Grand Portage, and 1800 miles further to their most remote stations. "Sometimes," they added dismally, "it happens that winter sets in before your Memorialists can arrive at the factories where they intend to pass the winter and when that unfortunate circumstance takes place there are instances of several having starved, and even so direful have the consequences been as to occasion the casting of lots for an unhappy victim to serve as food for his more unhappy companions." This memorial was signed by John Porteous, Holmes and Grant, Simon McTavish, Charles Grant, Todd and McGill, Benjamin and Joseph Frobisher, McGill and Paterson, Forest Oakes, George McBeth, and Adam Lymburner. Most of these ranked among the foremost merchants of the province.

Besides twenty canoes designed to supply the local trade of Mackinac, licenses were issued in 1778 for sixty-one canoes destined for places beyond, exclusive of the northwest trade which was mainly conducted from Grand Portage. These were distributed in the following proportions:—two to Grand River; three to Grand River and the Mississippi; six to the Mississippi; two to the Northwest; twelve to the Illinois; twenty-one to La Baye and the Mississippi; eight to Nipigon; three to Lake Superior; four to Prairie du Chien. Included in their cargoes, were 680 fusees and 29,575 pounds of powder.

The merchants trading in this quarter soon after formed an association which they termed "the general store," having a nominal capital of 29½ canoes and 438,750 *livres* in merchandise. Nine of the partners are named as residing in Montreal, seven at Mackinac, six at the Mississippi, one at each of the following places Akikemazac, Deux Riviéres, Grand River, La Baye, La Point in Lake Superior, Matchedash, Riviére au Sable, St Joseph's, and Saginaw. The principal merchants living at Mackinac were Mathew Lesley, David McCrae, John McNamara, Patrick Duggan, Henry Bostwick, and Benjamin Lyons. Mention is made of Lyons as the owner of houses at the mouth of French River and Alexis Campion is named as residing at Matchedash Bay.

This combination of interests was promoted by Major De Peyster, the

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commander of the garrison, with the object of driving out of the country unlicensed traders of whom there seem to have been a good many scattered among the Indian villages. One of these, a negro from St. Domingo, known by the singular name of Baptiste Point au Sable was captured at the River du Chemin, and another rendered desperate by pursuit, blew himself to pieces with a barrel of gunpowder rather than surrender.

In the summer of 1778, a strong body of Virginians took possession of Kaskaskia and followed up their success by the capture of Vincennes; in both instances being joined by many disaffected inhabitants. The principal trade of the Illinois was in consequence diverted from Mackinac to the Spanish posts beyond the Mississippi. A party from Kaskaskia plundered the traders at St. Joseph's, but was pursued and defeated. Hostile Indians and half-breeds instigated by the Spaniards and Virginians constantly menaced St. Joseph's, La Baye, and even Grand Portage.

A small detachment of regular soldiers was sent from Mackinac in 1780 to the latter place where they built a blockhouse for the protection of merchants. Militia officers were stationed at La Baye, St. Joseph's, and St. Mary's, and scouting parties despatched in various directions. Finally two expeditions, each composed of a few regular soldiers and volunteer militia and a considerable number of Indians, were sent against the Illinois and the Spanish frontiers. One of these under Charles de Langlade proceeded by way of Chicago directly to the Illinois. The other commanded by Capt. Hesse (late of the 60th) followed the Fox and Wisconsin rivers to the Mississippi. This party built a stockade at Prairie du Chien where it was joined by a large body of Sioux. They next seized the lead mines and captured some boats with stores, but were afterwards repulsed in attacks on the Spanish forts at St. Louis and Cahokia although they brought off a number of prisoners and inflicted much damage.

Taken as a whole, the trade of Mackinac and all places beyond, including the northwest, produced annually £100,000 worth of furs or about half the entire quantity exported from the province. The cargoes of one hundred canoes, each navigated by a crew of eight men, were required to pay for them. The average value of each canoe-load of goods including the cost of transportation to its destination, but not the payment of wages, was estimated at £700. A considerable variety of goods was needed for successful traffic. Guns, powder, ball, knives, hatchets, rum, and tobacco were in greatest request but a list of articles usually taken includes saddles, spurs, bridles, saddle-cloths, and housings,

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morris-bells, razors, combs, looking-glasses, plumes, beads, ribbons, lace of several kinds, hats, laced and plain coats, shirts, shoes, and bed-gowns; six sorts of blankets, handkerchiefs, calimancoes, osnaburgs, cottons, calicoes, muslins, linens, swanskin and embossed serge fabrics; white, black, blue, brown, green and scarlet cloth of several grades; thimbles, needles, thread, pewter-basins, iron pots, brass, copper, and tin kettles, snuff and tobacco boxes, bar iron and steel, silver crosses, finger-rings, gorgets, arm-bands, wrist-bands, buckles, ear-rings, hangers, brooches, moons, earwheels and ear-bobs, beaver-traps, fish-hooks, spears, hoes, and fire-steels. All of these things were brought from Montreal in canoes by way of the Ottawa as this was found to be both a quicker and cheaper mode of transportation than in sailing vessels on the lakes.

As the beaver gradually disappeared from its favorite haunts in the Michigan peninsula both the trade and population perceptibly declined. Many of the inhabitants had emigrated to the Wabash and Illinois where they hoped to be beyond the grasp of the meddlesome English law. The trade then was carried on in a less reputable manner than at Mackinac owing chiefly to the size of the settlement and lawless character of many of the inhabitants.

Lieut.-Governor Hamilton reported shortly after his removal in 1776 that "regulations for the trade with the Indians are either not generally known or not enforced. For example great abuses exist in the weights and measures used by the traders and for want of an office to stamp the silver-works which make a considerable article in the trade with the savages, they get their trinkets so debased with copper as to lay open a large field for complaint.

"The number of traders not being limited allows of many engaging in it who have no principle of honesty and who impose on these poor people in a thousand ways to the detriment of honesty and to the disgrace of the name of *trader* among the savages which usually means with them an artful cheat. The distrust and disgust conceived for these traders occasion many disputes which frequently ended in murder. This trade being lucrative engages several who have little or no capital of their own to procure credit sometimes to a considerable amount, their ignorance, dishonesty, (or both) occasion frequent failures; the adventurers then decamp to some other post where they recommence the same traffic improving in art and villainy, and finally become desperate in their circumstances and dangerous from their connections and interest with the savages."

Bad as these men may seem, their *engagés* were infinitely worse. "They are" says Hamilton, "the most worthless vagabonds imaginable.

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They are fugitives (in general) from Lower Canada or the colonies who fly from their debtors or the law, and being proficient in all sorts of vice and debauchery corrupt the morals of the savages and communicate to the wretches disorders they might have continued untainted by, were it not for the intercourse with these *engagés*. Having contracted new debts, they fly to the more remote posts where they recommence the same rade."

The population of the settlement did not exceed 2100 of whom 127 were slaves. The French Canadians he described as easy-going and illiterate, few of them being able to read and still fewer to write their town names. "They build on the borders of the Straight, and occupy about thirteen miles in length on the north and eight on the south side. The houses are all of log or frame work, shingled. The most have their orchards adjoining; the appearance of the settlement is very smiling."

The new settlers on the other hand were active and enterprising. They had introduced sheep and black cattle and their farms were managed to the best advantage. All the large vessels on the lakes were owned by them and he anticipated that in a few years the Canadians would be compelled to part with their lands and become reduced to the condition of dependents. It is stated, apparently on good authority, that there were then only thirty Scotchmen, fifteen Irishmen, and two Englishmen in Detroit, exclusive of the garrison, but the greater part of the trade of the place was already in their hands.

The population was considerably increased during the war by the arrival of fugitives and prisoners from the frontier who were encouraged to settle on lands in the vicinity. Indian parties accompanied by white officers were constantly sent out to harass the borders of Virginia and Kentucky and traders followed in their trail with packhorses as far as the villages near the Ohio. The portage from the Miami of the Lakes to the Wabash had been made passable for carts and the exclusive right of carrying goods was granted to Mr. Maisonville of Detroit.

At Niagara there was not a single inhabited house outside the walls of the fort. Glimpses of the state of trade and the life of a trader at that post during the Revolution are found in the correspondence of Francis Goring.

Writing on the 23rd of Sept. 1779, he says:—"I have lived at this place three years last August, and have had two masters in that time and am now getting a third, still in the same house. The first was Mr Pollard, he made a great fortune and left off. The second, Mr Robison, who was formerly a captain on these lakes, is now tired of business and assigns

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in favour of George Forsyth who has treated me with the greatest kindness and is ready to serve me in anything I should ask. I have had several offers by my two old employers to leave Niagara and live with them in Canada, but I believe I shall continue here which I prefer to Canada, the popular place where everything is carried on with the greatest gaiety, and this is a place which you may say is almost out of the world, in the woods, and frequented by nothing but Indians except the people of the garrison. . . . . At this place is carried on a great business which consumes every year £30,000 sterling worth of merchandise of all sorts which is mostly retailed to the Indians. We employ four clerks of which I am the senior. For the first two years my salary was but small, but I have now (and I flatter myself that there is not a clerk in these parts that has so much) about fifty guineas per annum, being found food and washing. By carrying on a correspondence with my friend Mr. Cruikshank who supplies me with silver work, such as the Indians wear, which I dispose of to the merchants in the upper country, and the profit arising therefrom is sufficient to find me in clothes."

In 1767, Sir William Johnson reported the presence of unlicensed traders at Toronto, but it seems to have been abandoned altogether as the trading-station soon afterwards. Even the trail leading to Lake Simcoe was little used, and the Trent valley route became almost forgotten. Benjamin Frobisher said in 1785:—"I have seen several persons who have gone from hence (Montreal) to Lake Huron by the carrying place of Toronto, but have only met with one who set out from the Bay of Kentie and that so far back as the year 1761 and the knowledge he seems to have of the country he travelled through I consider very imperfect."

The commerce of Oswego had steadily declined since the conquest. Instead of forty or fifty traders as in 1750, but one named Parlow remained in the summer of 1779. His property was pillaged and his buildings burnt by a party of Americans and Indians sent for that purpose from Fort Stanwix and he then took shelter in the small fort recently built on Carleton Island. Other traders followed him there and for a few years a fair trade was carried on with the neighboring Indians.

The continuance of the war occasioned everywhere an enormous rise in prices and a great scarcity of imported goods.

The scarcity of coin and in fact of any medium of exchange probably accrued to the benefit of the traders. Gold, silver, and even copper coins of most European countries passed current. In addition to the ordinary French and English pieces, Spanish moidores, pistareens, pistoles, and dollars, the Johannes of Portugal and Caroline of Germany were in common circulation.

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LAKE CURRENTS.

By L. J. Clark.

(Read, 23rd April, 1892.)

At a meeting of the Canadian Institute, held April 4th, 1891, the following resolution was passed, on motion of the writer seconded by Mr. A. Macdougall:

"That before any further steps be taken to promote the construction of a 'Trunk Sewer,' it is necessary that more definite, and precise information be obtained regarding the currents of the lake between the mouth of the Humber, and the south side of the Island and Victoria Park."

"That the City Council be requested to take a series of Float Observations for a period of at least three months, extending through the summer and a portion of the fall—say from July till October—with temperature observations of the water at various depths, and readings of the velocity and direction of the wind, taken on the lake at the same time the floats are put in; these floats to be placed in deep water, commencing at thirty, feet in depth, and extending to sixty feet, or even deeper."

"That the co-operation of the Provincial Board of Health, and the Board of Trade be enlisted; and that a copy of this resolution be sent to each of the boards and to the City Council; and that a delegation consisting of Professor Carpmael, Dr. Canniff, Mr. A. Harvey and the Mover and Seconder be appointed to bring the matter before the above named corporate bodies."

In pursuance of the above resolution the matter was brought to the attention of the Boards of Health and Trade respectively, and unanimously endorsed by them. Also a committee was nominated by each body to co-operate with the committee from this Institute to bring the matter before the City Council. Mayor E. F. Clarke arranged for a meeting with the City Engineer, W. T. Jennings, at which the subject was duly discussed, with the result that the engineering department undertook, with the assistance of the departments under Professor Carpmael and Dr. Bryce, to carry out the investigations referred to, the former to supply data from the Observatory in regard to the direction and velocity

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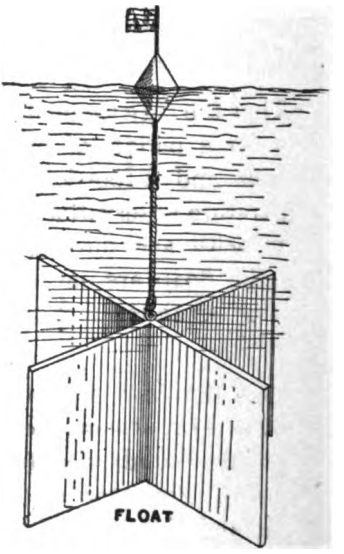
of the wind, while the latter was to make a thorough analysis, both chemical and bacteriological, of samples of water taken from the various points.

The investigations were carried out under the directions of Mr. C. Rust, Assistant Engineer, and N. Kerr, of the Engineer's department, Dr. Mackenzie, of the Provincial Board of Health, and the writer on behalf of the Institute. On the first trip, besides the above named gentlemen, Professor Carpmael, Arthur Harvey, President of the Institute, Mr. Hamilton, Manager of the Waterworks, and Mr. R. W. Elliot, of the Board of Trade, accompanied the expedition; and on many of the subsequent trips, scientific gentlemen and interested citizens showed the importance which they attached to the investigations by joining in, and giving the benefit of their suggestions to, the work.

The apparatus used for ascertaining the direction and velocity of the currents was a float or drag made of two cross brackets of wood covered with linen, a rope of from twenty to sixty feet attached, to suit the required depth, and a tin float surmounted by a flag, and numbered. The floats were made of different sizes, the arm pieces of the brackets varying from two and a half feet to five feet in length, and the canvas from 27 to 54 inches in breadth. These drags required to be nicely adjusted by hanging weights to them to keep them in position, and it sometimes occurred that we would lose a float, flag and all, by weighting it a little too heavily.



Stations were placed nine in number along the city front from the mouth of the Humber to Victoria Park in water ranging from thirty to sixty feet in depth, as follows, No. 1, in Humber Bay, off West Toronto Water Works; No. 2, half way between No. 1 and the mouth of the new intake; No. 3, at the intake; No. 4, outside the Island in a line with Church Street; No. 5, south of the Eastern Gap; No. 6, off Ashbridge's Bay in a line with Leslie Street; No. 7, off the Woodbine; No. 8, half a mile off Victoria Park wharf, and No. 9, one mile south of No. 8, in 70 feet of water.

A couple of sextants, a good marine glass, a sounding line, a supply of glass-stoppered bottles with apparatus for taking deep water samples,

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and a couple of self-registering thermometers, together with one for taking deep sea temperatures completed our outfit. The deep sea thermometer referred to, was supplied by Professor Carpmael from the Observatory, and was of a pattern specially designed for taking observations on the ship Challenger on its voyages of deep sea investigations; it was made by the celebrated firm of Zambra and Negretti.

Our *modus operandi* was to start from Church Street wharf, about 9 a.m., on board the Ada Alice and visit our stations, take samples of water, record the temperatures, and put out generally two floats at each station; then come in between 12 m. and 1 p.m., and start out again at 2 p.m., and pick up our floats, taking observations by means of the sextants of their location when taken up. These positions were afterwards plotted on a map, showing by means of lines and arrows the direction and distance the floats had moved. The direction and velocity of the wind was afterwards obtained from the observatory for the corresponding days and the whole tabulated as follows:—

DATE.	Depth of Float.	Mean Velocity, and Direction of Wind.			Direction Taken of Float.	Distance Travelled in Miles.	Time in Hour and Min.	Distance Per Hour in Miles.	LOCATION.
		9 a.m.	1 p.m.	4 p.m.					
	feet						H. M.		
July 2	20	2 E.	6 E.	6 E.	S.W.	0.20	4.15	.047	Leslie Street.
" 6	16	7 W.	10 S.W.	10 S.W.	NNE	0.50	6.25	.08	Eastern Gap.
" 8	30	12 N.	14 N.	6 N.	ENE	.94	5.40	.17	Leslie Street.
" 9	25	6 S.W.	6 S.W.	7 S.W.	S.W.	2.06	5 30	.37	" "
" 10	25	4 W.	4 S.E.	7 S.W.	S.W.	2.38	7.30	.31	" "
Aug. 17	30	4 E.	3 E.	8 E.	S.W.	1.55	6.10	.025	" "
" 18	30	Calm	8 S.	10 N.	S.W.	3.03	4.10	.72	2 m's S. of Vict. P'k.
" 19	30	5 E.	7 E.	10 E.	S.W.	1.00	5.35	.18	W. of Island.
Sept. 1	20	1 W.	14 S.E.	11 S.	E.	0.50	4 05	.12	Eastern Gap.
" 7	20	4 W.	9 S.	13 N.W.	S.E.	.77	4.30	.17	Woodbine.

The observations were continued altogether about 35 days, viz.: 8 days in July, 5 in August, 9 in September and 11 in October. Some days the lake was so rough it was impossible to continue our operations; on the 3rd of July, having got as far as the Eastern Gap we were compelled to turn back owing to the quantity of water shipped by the Ada Alice. It

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was unfortunate that we had not a boat that was capable of standing a rougher sea, as that is the very time when the required information would be most valuable. The highest velocity of the wind we were able to operate in was 25 miles per hour.

While the currents seem to be under the influence of the winds to some extent, there is considerable lack of uniformity, particularly at different stations; for instance, the currents in the Humber Bay did not conform to the same general principle as at other stations; also, the currents at the Eastern Gap seemed to be different from those to the east and west of it. But one thing seems to be pretty clearly proved, that the general direction of the currents is paralled to the coast line from Victoria Park to the western extremity of the Island, that is N.E. and S.W. nearly. Thus North East, East, and South East winds pretty generally produce currents flowing South West, while South, South West, and West winds give North Easterly currents, and North and North West winds give rise to variable currents; thus on seven occasions when the wind was from the North and North West the resulting currents were two North East, three South West, and two South East. Also a South West wind would produce a North East current south of the Island, and a North West one west of the Island. The phenomenon of the current being in a contrary direction to the wind was more marked in Humber Bay than to the south of the Island; although on one occasion, on the 17th of July, we put out, near Victoria Park, first a 30 feet float, second a surface float without flag or drag, a mere tin can with an iron rod, four feet in length, attached, and third an empty tin can; the wind was fresh from the East; the first and second floats went dead against the wind, while the empty can was driven along before the wind on the tops of the waves. Close in shore we sometimes observed the current in an opposite direction to that farther out.

Instances of counter under-currents were obtained from Mr. J. Raynor and Mr. J. G. Rosesseau, fishermen at Niagara. They informed us that when they had their nets out in deep water during the prevalence of strong easterly winds, they would find in drawing in the nets that any floating submerged leaves or weeds would be caught on the opposite side of the net, showing that the under-current was from the West. This would indicate that the waters, being driven to the West, pile up at Burlington Beach and the head of the water thus raised forces a portion of the water back as an under-current. This would be more noticeable in Humber Bay if it were more closed in by Mimico point. Instead of giving the reverse undercurrent close in by the shore, it would probably be found out in a couple of hundred feet or so of water.

We made a trip to the mouth of the Niagara river to ascertain if

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possible how far the current of the river could be traced across the lake. We put out a number of floats inside the bar and in the mouth of the river, but unfortunately we gave the floats too much line and most of them grounded on the bar; one or two that got over safely took an easterly direction. There is a distinct color line dividing the water inside the bar from that outside, and the difference in temperature is very marked. In the river, both at the surface and at the bottom the temperature was as high as 69° or 70°, while outside, at the depth of 400 feet, we found the water at its maximum density or 39·5° Fh. This accounts for the coolness of our water supply in Toronto; although it primarily comes through the Niagara river and is heated up to the point already indicated, before it reaches us it has to come over that cold sub-stratum of water, at least for thirty miles; so that at the intake in the month of July, we found the temperature as low as 43°; in October it was observed to be the same, and only slightly higher in August and September.

As the practical outcome of these investigations is to ascertain with what degree of safety sewage may be deposited in the lake, it becomes necessary to consider another factor that enters into the question, viz., the effect of diffusion upon sewage. The share of the work, in these investigations, carried out under the superintendence of Dr. Mackenzie, on behalf of the Provincial Board of Health, will afford material aid in solving this problem; the substance of which will be found in the following quotation from Mr. Rust's report. "To ascertain, if possible, from actual tests, how rapidly diffusion and oxidation take place, Mr. Mackenzie, on the 16th October, took samples of water, in a direct line from the mouth of the intake to the outlet of Garrison Creek sewer, which discharges 400,000 cubic feet, per day. I attach a copy of the results, by which you will see that the sample taken within a little over half a mile of the mouth of the sewer came within the limits of first-class water; the wind on the occasion was from the North, which would tend to carry the sewage direct to the intake. This shows very favorable results, and tends to prove that there will be no possible danger of contaminating the water supply if the sewage be discharged into the lake at a distance of six miles east of the intake. When the population of the city exceeds 500,000, and it is found that there is the slightest danger to the water supply, precipitation works could be erected and the sewage treated by chemical means." The copy of the schedule referred to shows that a sample of water taken near the mouth of the sewer showed a degree of organic impurity by Muter's scale of 2·44 per million, while first class water should not show above ·25. It also showed as high as 40,000 bacteria per cubic centimetre; yet we find that within half a mile, this water is raised to a standard of first class purity. We can then judge of

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the immunity from danger there would be if the sewage outlet were removed to a distance of six miles.

I make one further quotation from Mr. Rust's report. "I feel satisfied from the results of the experiments that the currents are caused by the winds. They change direction as the wind changes, although sometimes after a sudden shifting of the wind, the upper and lower currents have sometimes different directions. By the attached tables you will see that during this fall there has been a great number of days in which the wind blew from an easterly direction, and to this is to be accounted the large percentage of floats which drifted in the direction of the intake pipe. From the Observatory reports we find that the prevailing winds are from a westerly direction. The Hon. W. McAlpine and Messrs Hering and Gray, in their reports on the Trunk Sewer, considered that the sewage could safely be discharged into the lake east of the intake pipe."

With the above views I entirely agree and am of the opinion that the mouth of the intake pipe is in about the best possible position, as it is the nearest point to the shore where a depth of seventy feet of water can be reached; and double that depth is found within a few hundred yards to the South. The force of this will be seen when you refer back to that part of my paper where I drew your attention to the fact that the prevailing direction of the currents was about parallel with the coast line. Now as the mouth of the intake is less than half a mile from the shore of the island, it stands to reason that if we take our outlet pipe a *mile* from the shore line we get our sewage a half a mile outside of the range of the inlet pipe. Herein, I believe, is perfect safety.

And when we consider the immense advantage it will be to us to get clean rid of the whole foul mass of sewage without creating plague spots in our fair city, in the shape of sewage farms or what is worse, precipitating works without regard to the enormous cost of such works we are constrained to say, "'Tis a consummation devoutly to be wished."

There is yet required to be made a careful and thorough investigation into the extent to which diffusion takes place in large bodies of water and its effects on sewage. The Council, on recommendation of last year's Trunk Sewer Committee, are partly pledged to undertake that work this year.

In conclusion I beg to say, that as the Institute was instrumental in having these valuable preliminary investigations made by the Council, I hope the members of the Institute, individually, as well as collectively, will continue to use their influence to help on the great work of a perfect system of sewage disposal, for which Toronto is languishing.

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THE PRIVATE CORRESPONDENCE OF LIEUT.-COL. COFFIN, DURING THE REBELLION OF 1837.

By H. R. Fairclough, M.A.

(Read 12th March, 1892.)

It has been my great privilege to read a packet of letters written by the late Lieut.-Col. Coffin. Though I never knew or even saw the writer, still so vividly does the man's noble personality appear between the lines he penned, that I feel drawn towards him as to a friend, the touch of whose vanished hand, and the sound of whose voice, now still, the pages perused have in no slight measure supplied. The individuality of the writer I have been able to picture to myself still more fully, through the many conversations I have had with several of his intimate friends and relatives, particularly one, the lady to whom a number of the letters before me are addressed. It is because Col. Coffin was so well known and highly esteemed in Canadian public life, and because his letters deal with public events at an extremely critical period of our national history, that I have taken the liberty of bringing this interesting correspondence before the notice of the Institute.

Col. Coffin* came of a fine old stock. Burke, in his "Colonial Gentry," speaking of the Coffin family says that "Sir Richard Coffin, Knight, accompanied William the Conqueror from Normandy to England in the year 1066, and the manor of Alwington, Co. Devon, was assigned to him."

Though, on the face of it, this statement is absurd, still it indicates the

*William Foster Coffin was born at Bath, Somerset, England, in 1808. In 1813 came with his father to Canada, but returned to England, 1815. Entered Eton College, 1817. Won an Eton Postmastership at Merton College, Oxford. Returned to Canada, 1830. In 1835 was called to the Quebec bar. In 1838 was appointed Assistant Civil Secretary, and actively assisted Sir John Colborne in allaying civil strife. In 1839 was appointed Stipendiary Magistrate at Ste. Marie, a disaffected district, and in 1840 Commissioner for Police in Lower Canada. In 1842 became Joint Sheriff for District of Montreal, but resigned this position in 1851. In 1856 was made Manager of Ordnance and Admiralty lands, a position which he held until his death in 1878. Was offered but declined the Lieut.-Governorship of Manitoba. Acted on numerous government commissions. Raised and commanded the Montreal Field Battery, 1855, and was promoted to the rank of Lieut.-Colonel. Was a member of the Royal Institution and a Governor of McGill College. His published literary work includes a "History of the War of 1812 (Montreal 1864) and "Thoughts on Defence from a Canadian Point of View" (Montreal 1870) He married a daughter of Deputy Commissary-General Clarke, a near relative of Lord Lyndhurst.

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antiquity and nobility of the family. The ancestral home of the Coffin's is Devonshire—a county which, as readers of Kingsley's "Westward Ho!" are well aware, has given England so many of her sailors and soldiers.

In the middle of the last century, some members of this family were settled in Boston, Mass. On the breaking out of the Revolutionary War they refused to desert the old flag, and John Coffin, Col. Coffin's grandfather, with nine children went to Quebec, where he distinguished himself during the siege of 1775. On the 31st Dec. in that year he kept the guard at Près de Ville under arms, and with great coolness, at the critical moment directed Capt. Barnsfare's fire upon the invading forces. "To him," thus writes General Sir Guy Carleton, afterwards Lord Dorchester, "with the assistance of Barnsfare, I attribute the repulse of the rebels on that side of Quebec, where Mr. Montgomery attacked in person."

Col. Coffin's grandfather had six sons and four daughters. One of the former, Francis, became an admiral in the British navy; another, Nathaniel, died Adjutant-General of Militia of Upper Canada; another, the Hon. Thomas Coffin, was a member of the Legislative Council of Lower Canada. The second son, William, was a captain in H. M. 15th Regiment of Infantry, and at the time of his death, in 1835, had Brevet Major rank. He married a Mrs. Austin, whose maiden name was Foster, and it is their son, William Foster Coffin, who wrote the letters that are the subject of this paper.†

Before I leave the Coffin family, it may be well to shew briefly who the relatives are to whom these letters are directed, and to whom Col. Coffin was so warmly attached.

A brother of John Coffin, who also lived in Boston, Mass., but at the time of the Revolution made England his home, had three sons, John, Isaac, and Nathaniel. Isaac became an admiral in the British navy and for his most distinguished services was created a baronet, and given the Magdalen Islands. John, afterwards Gen. John Coffin, settled in New Brunswick. He had a family of eight, three sons and five daughters. Two of the sons became admirals in the navy, the other a general in the artillery. Of the daughters, Anne, married Major, afterwards Sir Thomas, Pearson, well known for the part he took in Canada in the war of 1812, while Mary married Charles Ogden, Solicitor-General, afterwards Attorney-General, of Lower Canada. The eldest daughter, Carolina, married the Hon. Charles William Grant, afterwards Baron de Longueuil, son of the Baroness de Longueuil in her own right and Captain

†Of the daughters of John Coffin, the third, Margaret, married her cousin, Lieut.-Gen. Sir Roger H. Sheaffe, Bart., who fought at Queenston Heights, and on the death of Gen. Brock took command and completed the victory.

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David Alexander Grant, of Blairfindy, Scotland. The children by this marriage were Charles Irwin Grant, Baron de Longueuil, who died in 1878, and Charlotte, who is married to Mr. J. Antisell Allen, both of whom are living in the beautiful old home of Alwington, in Kingston, Ont., for some years the residence of the Governors-General of Canada.

It is to Carolina, Baroness de Longueuil, and her daughter Charlotte, that the letters in the packet are addressed.

The correspondence to which I have had access covers a period of over six years, from January 24th, 1834, to March 17th, 1840. There are twenty-six letters in all, and, being written to intimate friends and relatives, they naturally contain much that is of merely family and personal interest. But there is also a great deal that must be interesting to Canadians in general, and it is chiefly the writer's account of and frank comments on the exciting political events of the day that I desire to bring before your notice.

At the outset let me utter a word of caution. Even to-day a narrative of the incidents of 1837-38 can awake not a little intensity of feeling, and it is but natural to expect that a young man, living in the midst of those events, should feel the heat of party strife and express the sentiments of an ardent partisan. But herein lies the value of these letters. It is often difficult to understand and estimate fairly the principles and sentiments of both sides in a political struggle, and this holds more true the farther the contest is removed from our own time. To-day Canadians of all parties give their unqualified assent to the principle of responsible government, and it is not always easy, therefore, to appreciate the honesty and sincerity of those who in former days so bitterly denounced William Lyon Mackenzie. Yet the latter lived to acknowledge himself that it would have been a misfortune for Canada if all his plans had succeeded. In any case let us bear in mind that in Lower Canada the struggle of '37 was very different in character from that in Upper Canada —that it was chiefly a racial strife, and involved questions which, as recent events have shown, are even yet unsettled. Col. Coffin was an enthusiastic loyalist, and to his mind the problem to be solved in Lower Canada in the earliest years of Queen Victoria's reign was whether the work of Pitt and Wolfe was to be undone, and the tricolor was once more to float over the citadel of Quebec. His views as expressed in these letters, were undoubtedly the views of a great majority of the British population in Lower Canada at that time, and therefore deserve, to say the least, a respectful hearing. Only by studying both sides can we get the proper historical perspective.

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As a fitting introduction to the narrative of hot conflict and fiery strife, which is to follow, the first letter gives a most vivid description of the burning of the Château de St. Louis, at Quebec, on January 23rd, 1834. This castle had been used as the residence of the Governors of Canada for upwards of 150 years. It was never rebuilt.

In 1835, when the troubles in Lower Canada were coming to a head, Sir Robert Peel determined to appoint a Commission of inquiry, but his term of office was too short to allow him to carry out his intentions. These, however, his successor, Lord Melbourne, fulfilled. The Lord High Commissioner appointed was the Earl of Gosford, while Sir Charles Grey and Sir George Gibbs were made assistant commissioners. Shortly afterwards Lord Aylmer, who was administering the Government in Lower Canada, was recalled, and the Earl of Gosford took his place as Governor-General. Lord Gosford arrived in the frigate Pique at Quebec, on August 23rd, 1835, and in a letter written a month later, on September 26th, the Commissioners are humorously described by Col. Coffin, who also indicates the political unrest then prevailing in Canada, and complains of ignorance at home respecting the Colonies.

"Parliament meets next month for the deliberate legal annihilation of British interests. . . . As you may imagine the proceedings of our new rulers are the subject of much anxious speculation. As yet they are secret and mysterious. The people themselves look as if burthened with some mighty secret, or as if environed with the web of some frightful conspiracy. Everything they attempt is *a tatons*. They walk like so many cats upon thin ice, slipping at every step and fearful lest the next may plunge them beneath the surface. This is the natural consequence of the terrorism which has been exercised by Roebuck and his mendacious accomplices in England, who have impressed the British public with the belief that the Canadians, goaded by the tyranny of the English population, were in a state of actual revolt. An officer of the Pique assured me that previous to their sailing it was a matter of general surprise that the commissioners had not been backed by an extra regiment or two. Nothing in fact can be compared with the gross and shameful ignorance that generally prevails respecting these Colonies. The meeting of the Assembly will alone satisfy the existing curiosity which amounts to a wish to know 'the worst at once,' and then we shall find that all this disturbance has been created and all these undignified personages have been sent from their dull homes across the wide Atlantic, for the simple purpose of proving the fallibility of some infallible panacea for Canadian grievances. On the principles they profess they cannot do good and must do harm.

"Lord Gosford is a most unaristocratic looking lord. I have seen many a farmer with more of the air of a gentleman. He is of quarto size and dimensions, with a very tropical complexion, being much of the hue of a nutmeg. They say that he is good-natured and accessible, that he delights to walk about with his hands in his breeches pockets, or to relax from such absorbing occupation by a sly game at pitch farthing with the little boys under the château wall. Sir George Gibbs—did you ever hear such a name—is an engineer officer suddenly metamorphosed into a diplomatist. His trade

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is that of springing mines, let him beware that the present does not explode beneath his own feet. Sir Charles Grey is the *beau-ideal* of a Leadenhall butcher. We are told that he is a very good man, but he looks like a very vulgar one. They go here by the name of the three G's—gander, goose and gosling."

It was just a month after this letter was written, when the Parliament of Lower Canada assembled. Lord Gosford, in a very conciliatory speech, assured the House that all real grievances would be attended to. "The Home Government" he said "was prepared to surrender the control of all public revenue arising from any Canadian source, on condition of a moderate provision being made for the Civil list. Plurality of offices should be abolished, and intelligent French Canadians have the paths to positions of honor and profit open to them, equally with the English-speaking races; in future the fullest information with regard to the public accounts would be given the House; no bills would be reserved for the royal assent where it was possible to avoid it, and all complaints should receive due consideration."

But no concessions could please Mr. Papineau and his followers. They ignored the Royal Commission and appointed Mr. Roebuck their agent in England to press their grievances before Parliament. The Legislative Council throwing out this bill, Mr. Papineau indulged in some violent language. "The time has gone by" he said "when Europe could give monarchies to America; on the contrary, an epoch is approaching when America will give republics to Europe."

A supply bill for only six months was voted by the Assembly, but rejected by the Council, and the Governor in proroguing Parliament had to acknowledge his failure and consequent disappointment. "It is to me matter of sincere regret that the offers of peace and conciliation, of which I was the bearer to this Country have not led to the result which I had hoped for. The consequences of this rejection, and of the demands which have been made to his Majesty, I will not venture to predict."

Meanwhile Sir Francis Bond Head had assumed office as Governor of Upper Canada. He arrived in Toronto at the end of Jannary 1836, while the house was in session, and though announced in advance as "a tried Reformer," he soon showed that he had little sympathy with such Reformers as Mackenzie and Bidwell, who not content with airing their just grievances, resorted to veiled threats of secession and leagued themselves with Papineau and the Lower Canadian "Patriots," who were already preparing to resort to arms.

Finding that the new Governor would not become their tool, the Assembly cut off the supplies, but Sir Francis after refusing his assent to any money bills whatever, so that the members had no sessional allowance to

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draw, prorogued Parliament on the 20th April, and a month later dissolved the House and issued writs for a new election.

Public opinion was evidently opposed to the extreme measures advocated by the reform leaders, for in the ensuing contest the party, which in the last house had a large majority, was overwhelmingly defeated, and most of the leading men were beaten.

The joy with which this news was received by ardent loyalists throughout the country may be inferred from the words of Col. Coffin. Writing from Montreal, he says:—

"Hurrah for the Hero of the Pampas!* His jockeyship has stood him in good stead, and most sincerely do I rejoice at his victory. I only hope that he will know how to use it in moderation and wisdom. I am not infidel enough to doubt of such a man, but rest assured the most trying part of his task is yet to come. Everything is expected from him, and one false step may provoke a radical reaction which will make the Upper Provinces a territorial appendage to the United States in the course of a year. But—deuce take the clever fellow—he soars above misgiving. The people here and at Quebec are about to sacrifice whole hecatombs in his honor in the guise of public dinners."

Mr. Coffin himself, however, kept aloof from these demonstrations "being determined neither to eat, drink, or speak politically for a long time to come."

In Lower Canada the Legislature again met on the 22nd September. Lord Gosford announced in a dignified manner that the Home Government desired to give the members another opportunity of reconsidering their action, and he trusted they would vote the supplies in the proper manner. In the address in reply the Assembly did not refer to the question of supplies, but simply demanded that the Council should be made elective. Shortly afterwards a despatch from Lord Glenelg, Colonial Secretary, informed the House that this principle could not be admitted, but notwithstanding, the Assembly resolved to transact no business until the Council had been made elective. The result was a deadlock, and Parliament was prorogued.

In accordance with the report made by the Royal Commission, resolutions were proposed in the British House of Commons on the 6th March, 1837, to the effect "that it was unadvisable to make the Legislative Council of the Province elective; but that it was expedient that measures be adopted for securing to that branch of the Legislature a greater degree of public confidence." The Executive of the Province was authorized to use the public money of the Province for necessary expenses.

* That is, Sir Francis, who was known as "Galloping Head" from the "Rough Notes" he published in 1826 describing several journeys across the Pampas and the Andes.

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At this the Patriot (so called) party was roused to deep indignation; meetings for remonstrance were held frequently and in various places, and Papineau and others made hot revolutionary speeches. The excitement was intense, and at its height when William IV. died, and Queen Victoria ascended the throne. On August 18th, Lord Gosford assembled Parliament once more. The Governor made a dignified speech. The Home Government, he said, wished to give them another opportunity of considering their action before the Imperial authorities passed an Act which would deprive the Provincial Legislature of that control over its own revenues which it was desirable that it should have, " a result for the attainment of which Her Majesty's Government would willingly make every sacrifice, save that of the honor and integrity of the Crown." In the address in reply, presented eight days later, the Assembly pressed their former demands with more persistence than ever, and warned the mother country that if she carried her resolutions into effect her supremacy in British America would no longer depend " upon the feelings of affection, of duty, and of mutual interest " but upon " physical and material force." Her exercise of power was compared with that of " the most despotic governments of civilized Europe." Lord Gosford regretted the obstinacy of the Assembly, and dissolved the House by proclamation.

Many were the appeals now made by Papineau and his followers for the people " to lay down their lives on the altars of their country." It was clear that blood must be shed, and both " Patriots " and " Loyalists " began to prepare for the coming struggle. On the 6th November the first conflict took place. The so-called " Sons of Liberty " were leaving the place where they had been assembled, when they were met by a small number of members of the Doric Club, and a general fight ensued. This was followed by an attack upon the house of a Mr. Idler, where the Sons of Liberty met, the wrecking of Mr. Papineau's home and the sack of the office of the *Vindicator*. The Riot Act was read, and the magistrates of Montreal and Quebec issued proclamations forbidding the assembling of bodies of men for drill, and prohibiting " all public meetings and processions which are of a nature to disturb the public peace." A new commission of the peace was issued for the district of Montreal, which removed sixty-one magistrates suspected of disloyalty.

Meanwhile the troops were being concentrated in Montreal, where Sir John Colborne, now Commander of the Forces, had fixed his head-quarters. Not only New Brunswick and Nova Scotia sent aid, but even Upper Canada, through Sir Francis Head, despatched all the regulars in the Province, the Governor having determined to rely wholly on his militia.

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Earl Gosford, on the 16th November, issued warrants for the arrest, on a charge of high treason, of Messrs. André Ouimet, J. Dubuc, François Tavernier, George de Boucherville, Dr. Simard, J. Leblanc, L. J. Papineau, Dr. O'Callaghan, T. S. Brown, Rodolphe Des Rivières, and Ovide Perrault. Of these the last five managed to escape.

On the same day (16th Nov.) the Montreal Volunteer Cavalry, under command of Lieutenant Ermatinger, were despatched to St. John's to arrest two men named Davignon and Demaray. They had secured their prisoners and were returning to Montreal when about a mile from Longueuil they were met by some 200 men, armed with rifles and muskets, who opened fire on the troops, wounded the commander and five men, and finally rescued the prisoners.

In a letter dated November 17th, Montreal, Mr. Coffin speaks of this event :—

"These are queer times for quiet people. Things bear a very unpleasant appearance in this part of the world. I would not say dangerous, but certainly disagreeable. . . . Warrants have been issued for the arrest of several individuals in this City and District on charges of High Treason. In town we have been successful enough in bagging a few ;—to counterbalance this success, the Montreal Volunteer Cavalry, which was employed as a constabulary force, having been despatched to execute similar warrants in the vicinity of St. Johns, and having accomplished the object of their expedition, were attacked on their return by about 200 armed *habitants*, and after having had four of their number wounded were compelled to relinquish their prisoners and retreat, which they did in good style, and, considering that there were twenty-two only in number opposed to such enormous odds, in a manner which reflects much to their credit. This reverse will doubtlessly be magnified into an utter defeat of all the British troops in the Lower Provinces by the force of the "nation Canadienne." To reassure you on this head I give you the facts. The state of public feeling is very uneasy in this district ; the Canadians appear cowed in town, but they have shown pluck and preparation in the country. I have since I wrote the last word seen a very bright and handsome pewter ball which has just been extracted from the leg of one of the volunteers—an awkward customer I promise you. The British are, as you may suppose, very much exasperated. Should any disturbance take place, blood will be spilt, and such an occurrence may be hourly expected. The non-appearance of the troops which had been ordered from Halifax and the West Indies has placed Government, I should imagine, in a dilemma. If things proceed much longer in the same train the Kingstonians may before long find themselves called upon to perform what they have so recently promised.

"I must condole with Mr. Grant that the first act of rebellion should have been committed on his property. At the same time you may congratulate yourselves that you are safe at Kingston, and moreover that you have something to the fore there let the worst happen."

The next letter, written three days later than the preceding, acquaints us with some more of the stirring events of this exciting month :—

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"On Saturday" (*i.e.* Nov. 17th) "four companies of the Royals and two pieces of artillery were despatched to Chambly. Some of the Police accompanied them for the purpose, if possible, of identifying any of the insurgents. They met with many indications of a rebellious spirit—had a slight skirmish in the woods with some armed *habitants* and took seven prisoners. This appears for the moment to have created a panic, but I have grave doubts whether the effect will be permanent. It is evident that the peasantry has been extensively provided with arms and ammunition, and systematically instigated to resist the authorities. There can be also no doubt that with their immense numerical superiority, if they only knew their own strength and how to direct it to the best advantage, they might prove ugly customers. Until they receive some terrible lesson, I doubt very much whether they will be reduced to consult their own discretion. As yet they appear to obey their leaders implicitly. . . . Debartsch has been compelled to make his escape from St. Charles. T. S. Brown and Rodolphe Des Rivières have since taken possession of his property with many of the insurgent inhabitants of that vicinity. They are deliberately fortifying themselves in his house, throwing up fieldworks and making divers other military preparations. Their Commissariat Department has been actively employed within the last few days in killing and salting all Debartsch's cows. This is actually the case.

"The British inhabitants of the City are arming and drilling, and talking and swaggering after the most approved fashion. I really wish they would drop a little of the Bobadil. Modesty is the most graceful plume to the helm of valour. I dare say they will fight well enough, but they brag most unconscionably. The City was never more tranquil than at this moment. Papineau and a few other such vultures, against whom warrants of arrest for high treason have been issued, are off."

Two days after this last letter was written, Col. Gore was sent against the rebels posted at St. Denis. He was accompanied by 200 infantry, some volunteer cavalry, and three guns. At the same time Lt.-Col. Wetherell was ordered to proceed against St. Charles (otherwise known as Debartsch). The repulse of the troops at St. Denis on November 23rd, Wetherell's victory at St. Charles on the 25th, and the brutal murder of Lieut. Weir, who was captured by Dr. Nelson, the rebel commander at St. Denis, are events too well known to call for more than a mere reference to them.

Writing from Montreal on Dec. 1st, Mr. Coffin thus speaks of these thrilling incidents:

"Markham," (*i.e.*, a captain of the 32nd who was in command of the skirmishing party at St. Denis, and who had received four wounds), "is doing very well. Fancy his men, when landed from Sorel without shoes to their feet and altogether as war-worn as if they had retreated from Moscow, breaking from their ranks and rushing up to his lodgings to ask how he was doing, and when assured of his convalescence, cheering and dancing about like so many Bedlamites. I have been told that the scene was one of the most affecting ever witnessed. Of poor Weir it is painful to write. All that we have since heard confirms the first distressing intelligence. Nothing absolutely decisive is yet known, but of the fact of his murder there can be but little doubt. And yet I will undertake that a far louder feeling is displayed on his account at a distance than here. Here, as in the time of the cholera, and in all times of public peril, self

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absorbs every other nobler sentiment. Every man appears absorbed in one consideration--the worthier, how he shall fight; the more sordid, how he shall run. . . . Poor amiable kind-hearted Weir, by whose side I sat at dinner hardly ten days since! His fate demands a hecatomb and it will be sternly exacted. Eight companies marched yesterday for St. Denis from Sorel, the Light Company of the 32nd (Markham's and Weir's) among them; the men are awfully savage. I doubt if a trace of that murderous den will be left. So much for civil war. Woe be to those who have brought its horrors upon this hitherto peaceful land.

"Simultaneously with the departure of this detachment returned Col. Wetherell and his Royals with their two guns and thirty prisoners. They were received by an immense concourse of people and with the greatest enthusiasm. They brought with them the standard of revolt—a pole surmounted by a *bonnet rouge* with a gilt tassel and surrounded with a humble imitation of the Roman fasces. Ovide Perrault, of Montreal, Advocate, is the only man of note known to have fallen. At St. Charles about one hundred were slain—more may have fallen and their bodies have been burned in the houses which were destroyed.

"This District is in a lamentable state. The County of Two Mountains is quite in a state of insurrection. Hitherto these gallant patriots have done nothing but menace and expel the old country people from among them at the point of the bayonet. We have numbers flocking into town for protection who have been despoiled of their cattle and other moveables, and wantonly driven from their humble yet happy homes to beg their winter's bread in this city. Everything has been done and will be done for them that is practicable. A man at St. Johns, a loyal Canadian volunteer, was found in a field near that place yesterday with three musket balls through his body. He had been murdered by some of the St. Athanase Patriots. MM. Peltier and Cherrier, have been this day accommodated with apartments at the Queen's expense on charges of High Treason. At Quebec as well as here the volunteers are very busy and I understand getting on admirably. The townships are also arming, and all the back English settlements to which munitions of war can be conveyed without interruption have been amply provided. I think before they have done the French leaders will find themselves in a hornet's nest. The 43rd is on its way to Quebec by the Post Route. We expect daily to hear of their arrival and I suppose we shall have ten thousand men out in the spring, until when it will be strange indeed if we cannot keep the province."

A letter of December 9th gives us interesting information concerning the aid which the rebels expected from the Americans, also concerning the vigorous measures adopted by the Government.

"Things here brighten up extemporaneously and people's faces glisten proportionately, to be clouded *per contra* on the following day. The worst intelligence we have is of the unnatural though not unaccountable sympathy which is getting up on the other side of the lines. This is an evil without immediate remedy among a people who may be doubly influenced to act against us—part from the most honourable feelings, but the plupart from mercenary motives. The rebel recruiters on the lines offer eight dollars per month as the wages of their treasonable iniquity and 200 acres of land when the war is over and the British banner expelled from the American soil by the "*triumphant generals of the Republic.*" . . .

"But you want facts, not speculations. The first therefore is as cheering a one to us as it has proved ominous of the future fate of similar Yankee enterprises. A party

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of the rebels had purchased two brass three-pounders in the States and attempted by the assistance of some of their American recruits to bring them into the Province. The Militia however of Missisquoi Bay who had made application for arms to the Commander of the Forces, fortunately received them about an hour before intelligence reached them of the advance of the rebel detachment. With a zeal and promptitude altogether unexpected and which reflects the greatest honour upon them, they absolutely broke open the arm chests and ammunition kegs, rushed quite "promiscuously" to the spot where the rebels were—attacked them—killed five—wounded more—took some prisoners and captured the guns—bravo for the Yankees on our side of the lines!

"Poor Weir was buried yesterday with military honours, the whole population (British) having turned out to attend him to the place of interment. I never witnessed such a sight before. I suppose there were 3000 men under arms. Considering that they have been only three weeks under drill you would be astonished at the soldier-like appearance of some of the volunteer corps. It must have been an imposing and alarming spectacle to Jean Baptiste. I cannot write to you about poor Weir—the details of his fate are too horrible for your eye. I will, if I can find time to-morrow, give Dr. Sampson some account of it and other things. You have undoubtedly heard that the second expedition to St. Denis reached St. Hyacinthe and returned without having encountered any opposition. Poor Weir's remains were found at St. Denis. A proclamation will appear this morning offering £500 reward for the apprehension of his murderers.

"Martial law is declared. When we have time we shall give the rebels upon the Ottawa some proof of its efficacy. They are safe in a bag and can keep till wanted."

"The rebels upon the Ottawa" had not to wait very long. On the 13th Dec., Sir John Colborne marched against them with about 2000 regulars and militia, crossed the Ottawa on the ice, and directed his course towards the village of St. Eustache, where about 1000 patriots had assembled. Mr. Coffin accompanied the troops in the capacity of interpreter to Col. Maitland, and he was therefore an eye-witness of the battle of St. Eustache. His vivid description of the fight, was written to his young cousin Miss Grant. It is one of the most interesting letters in the packet, but unhappily is too long to be quoted in its entirety.

"You must know that as I was acting interpreter to Col. Maitland, I was with the leading files and had consequently the best opportunity of seeing everything, and perhaps the most brilliant sight I ever beheld was the first opening of our artillery upon the rebels as we advanced upon St. Eustache. We ascended the bank of the river; about two miles below the village we suddenly heard and saw the smoke of musketry in the woods on the opposite shore. This we knew arose from Globenski's corps of volunteers which had been detached through the bush in that direction to intercept any fugitives from St. Eustache across the ice. The rebels had anticipated them, and at a sharp bend in the river we suddenly came in sight of two columns of patriots, say about three hundred men each, crossing the river under the impression (as it ultimately proved) that the main body of the troops was advancing in that direction. Sir John was at that moment with the advance, he instantly ordered up the guns, at a moment the ranks opened out right and left and two or three pieces rattled up, unlimbered, and opened like light upon the gentlemen in *mufti* who were slowly wending their serpen-

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tine way across the ice at about the distance of a mile. You may fancy the *tableau* at the moment. The day was one of the calmest and brightest of a Canadian winter. The whole scene bore that still and peaceful character peculiar to the Canadian landscape at this season of the year. . . . In a moment all is animation and excitement. Words of command thunder along the line—the men roused from the plodding quietude of the march are loading and priming and bayonetting—a reawakened volcano—orderlies are dashing here, aides-de-camps there, and dragoons everywhere. Sir John and his immediate staff, looking like so many military cucumbers, are reconnoitering through their telescopes in front, while up come the guns, the artillery drivers lashing and swearing, and the horses doing all they ought not to do, until a couple of pieces are brought to bear, and then the thunder of their reports and the whistling rush of the balls, and the reiterated commands discourse sweet music after the school of Charles XII. . . .

"I had just returned through a street, the lower part of which in conjunction with the Church Presbytery and nunnery was one mass of living flame. Every here and there lay the body of some unhappy rebel stretched out upon the snow, with a small group of five or six idlers standing round each, while the deep glow of the conflagration brought into startling relief the livid features of the dead and the wondering countenances of the living. Here and there were groups of artillery removing their guns—soldiers searching for their billets—irregulars laden with plunder of the most incongruous description—horses that had broken loose rushing wildly here—tumbrils hurrying up from the vicinity of the flames in another direction—and then the din—the shouts—the wild laughter—the enquiries—the orders—and above all the deep diapason of the devouring fire. . . .

"The first detachment of the 43rd has reached Quebec. Pearson is not with it. The rest will be up soon. All the world is in glorious spirits and nobody seems to care a fig for the past or the future. Nothing but gaiety is in anticipation; how I should laugh at the change a Yankee invasion would effect! . . . You must not suppose that I have altogether lost sight of your late perils and present disquietude. I do not think you have any serious cause for alarm. Yet I cannot help thinking that Sir Francis has more on his hands than he bargained for. Navy Island and the Buffaloes never I *guess* came into his *calculation*. He has been taken by surprise not a little. I don't imagine he will be quite so ready to despatch *all* his troops on a future occasion. You will have the remainder of the 24th up by the same post with this letter. . . ."

After the battle of St. Eustache, the various districts lately so disaffected, made loud protestations of their loyalty. Having arrested some of the ring-leaders of the revolt, Sir John Colborne, deeming the country sufficiently pacified, returned to Montreal on the 19th December.

Meanwhile Lord Gosford had been pressing his resignation upon the Home Government. This was accepted about the beginning of the new year, but owing to illness his Excellency did not leave Quebec till near the end of February. Sir Francis Head followed him very shortly.

On January 14th Mr. Coffin writes:

"Our latest intelligence here from London confirms a very unexpected and, at this moment, unfortunate occurrence. Col. Sir George Arthur is appointed to succeed Sir F. B. Head as Governor of Upper Canada with the rank of Brigadier General. The

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Ministry has acceeded to the request of Lord Gosford for his recall, but his successor has not yet been named. The circumstance of the latter individual not being known in London induces me to credit the rumor that Sir John Colborne is the man."

On Sunday, February 25th, he writes:

"Lord Gosford we are assured will leave Quebec on Tuesday. I am told that he is looking very ill, and to tell you the plain truth I have my doubts if he can quit on this day. His remaining here, powerless himself and disqualifying others, is an incalculable evil. The crowning absurdity of his administration has been the proclamation of a general thanksgiving. It is tantamount to the repeal of Martial Law in this district —has been already adverted to in that point of view by the Chief Justice of the Court of King's Bench in his charge to the Grand Jury of this district. Conceive the anomaly of the very soldiers who are ordered to go to church and return thanks for the profound peace and tranquillity which has been restored to this province, being at the same time under orders to be continually ready at an hour's notice to march for the purpose of repelling invasion or suppressing insurrection. But the malignity of the evil is not yet felt."

Mr. Coffin was so far correct in his surmises that Sir John Colborne was appointed to administer the Government temporarily until a successor to Lord Gosford could be named.

The references in these letters to the troubles of Upper Canada at this time are not numerous, but in the last letter I have quoted from, Mr. Coffin speaks of one of the foolish plans projected by the misguided Mackenzie after he had taken refuge on American soil. Early in February, 1838, he designed attacks on Canada at four different points, Detroit, Sandusky, Vermont and Watertown, N. Y. The notorious Van Rensalaer and Bill Johnson assembled a force of about 2000 "patriots" at French Creek on the St. Lawrence, near Watertown, intending to attack Kingston, but the brave front made by the loyal militia overawed the enemy, and they gradually dispersed. However there was much alarm in Kingston.

About the time that the invasion of Kingston was expected Mr. Coffin was sent on an important mission to Albany.

"I must now relate to you the cause of my expedition to Albany and the matters and things which befell therefrom. I had the honour of being sent by Sir John Colborne in quest of Governor Marcy. . . . I went upon a Mission as nearly allied to diplomacy as the Canadian revolt is to the French revolution. But *badinage à part* Sir John treated me in that matter with a great deal of gratifying confidence and condescension. I was put in possession of all necessary facts—my letters were open and were rather those of introduction, and I was left personally to communicate what is generally contained in despatches. On my return I assumed the responsibility of conveying certain intelligence to General Wool, with whom I had a long and interesting interview, and I am happy to add that Sir John expressed himself satisfied, and that too in the kindest terms, with the manner in which I acquitted myself."

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In this letter Mr. Coffin expresses his views as to the attitude of the Americans in a very pointed and concise manner.

"The upper classes in the state, the educated and the intelligent, are decidedly averse to a collision with England. The lower classes sympathize with the rebels, less because they love patriotism than because they envy and hate the British. A war has been hitherto averted by the personal influence of a few sensible men."

Early in February the Earl of Durham was appointed governor-in-chief and "Her Majesty's High Commissioner for the adjustment of certain important affairs affecting the Provinces of Upper and Lower Canada." At the same time an act was passed in the Imperial Parliament, suspending the constitution of Lower Canada, and establishing a "Special Council" to take the place of the two Houses of Parliament. This council was to be composed of equal numbers of French and English. From one of the letters before me, I learn that among the appointments made by Sir John Colborne to the Special Council was that of Mr. Coffin's brother Austin, who was "to represent the interests and the wishes of the emigrant population of the townships."

With what intense eagerness Lord Durham's arrival was awaited may be gathered from a letter of Mr. Coffin's, dated March 30th, 1838:

"I know not what to think of the new Avatar. When in Quebec I saw a letter from the Hon. A. W. Cochrane, now in London. He augurs favourably of Lord Durham, and all the world here seems inclined to chime to the same tune. One thing is certain, he is the arbiter of the destinies of the people of these Provinces, and be it for good or be it for evil, I tremble to think how momentous a trust has been confided to the wisdom or to the caprice of an aristocratic Whig Lord, and a man who will pull down the high if he can, and keep down the low if he dares. From the sensation which Canadian affairs have created in England, and the ostentatious tuition his Lordship is now undergoing at the Colonial Office, (so many hours *per diem* the newspapers say) and his evident and most laudable desire to establish a noble reputation as pacificator of Canada, I fear that he may overdo the thing, that he may come out here with an exaggerated and Quixotic idea of the stern justice it is his duty to dispense, and in his anxiety to play the part of a Minos, confound the tried British loyalists with the *soi-disant* loyalists of Canadian extraction. . . .

"There is an *Association Canadienne* on foot here headed by a few respectable names—by a few of the heads of the old and first Canadian families who with a short-sighted anxiety to protract the existence of '*notre langue, notre religion, et nos lois*,' represent the mass of the French Canadian people—the whole district of Quebec, and Three Rivers and a vast majority of the district of Montreal, as perfectly loyal, and then ask, Are we to be disfranchised? Are we to be punished for the faults of a few?"

A letter dated Quebec, June 2nd, makes reference to the outrage perpetrated on May 29th in Upper Canada by a band of fifty rebels under Bill Johnson, who before daybreak boarded the steamboat Sir Robert Peel, while taking in wood at Well's Island, on the American side of the St. Lawrence. Though the weather was cold and stormy, the passengers

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and crew were forced to leave the vessel, which was pillaged and burnt.

Mr. Coffin writes:

"What an atrocious outrage! I was inconceivably shocked to hear that Mrs. Sampson and party had been exposed to the violence of these ruffians. I fear their loss in property must have been great, independent of the terror and cruel exposure to which they were subjected. The excitement throughout the loyal portion of the people here was intense, and is still so; it is easy, therefore, to imagine what it must be with you. I trust, however, most earnestly, that no serious attempt at retaliation will be made now in cold blood."

Lord Durham landed in Quebec, amid great pomp, on the very day of the Sir Robert Peel outrage. Mr. Coffin thus describes the new Governor:

"He barks loud and by the teeth he shows I think that (reversing the old proverb) 'his bite is waur than his bark.' This man Lord Durham is a smasher—he will make or break whatever he takes in hand—and one trait in the fellow I like, for good or for evil he wants no man to share the responsibility with him. This is a hasty opinion of a man who has been hardly ten days in the country, but it agrees with my preconceptions and is confirmed by the decision of character he has already displayed. His court, establishment, staff, etc., is of a very splendid description, and I really think, from his personal appearance and, where appropriate, from his courteous demeanor, that this display arises as much from policy as from natural taste for the magnificent. As policy it is undoubtedly good all the world over, but most especially in Lower Canada. The relicts of the patriot party, and this place is still plentifully bespatted with them, are evidently awestruck, nor is this feeling confined to them alone."

An incident that well illustrates the character of this aristocratic Whig Lord is recorded in a letter bearing the date of June 23rd, 1838, and written from Montreal.

"We are expecting daily to receive some definitive instructions respecting the future fate of the prisoners. What that may be John George Earl of D. only knows. I have, however, great misgivings. The Governor-General is to be here himself in the beginning of July. The fact is that the good people of Montreal are not more intractable than their neighbours. Through the Press they assailed his Lordship upon his arrival, whereupon the Vice-regal Earl countermanded the preparations which were then making for his reception here, and openly declared that he had intended spending £20,000 in Montreal, by which sum Quebec would be the richer. Whereupon the good City of Montreal fell upon her marrow-bones and cried '*peccavi*' in no time. A meeting was held incontinently, resolutions passed, and his Excellency declared to be the *ne plus ultra* of a nobleman, a Governor, an ambassador, *sapiens ne etiam et* . . . However that may be, his Lordship is to be here on his way to Upper Canada, and although he has expressed a determination to live on board of the steamboat that conveys him up, still it is hoped that he may condescend to cast the light of his golden countenance on the intelligent, independent, and disinterested population of the City of Montreal. I like this same John George for the dare-devil, don't-care-a-fig sort of way in which he carries on the war. He hired the John Bull as his private travelling carriage,—one of her boilers, however, got out of order, so that he is compelled to put up with a steam frigate. To make amends he has bespoke the River Saint Lawrence

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for his journey. Any man presuming to travel on it the same day is to be excommunicated forthwith. The very fishes have been ordered to retire to their holes at his august passover."

One of the first questions which Lord Durham had to deal with was the fate of the numerous political prisoners. A formal trial by jury was thought unsatisfactory, Frenchmen being likely to acquit and Englishmen to condemn, through sheer national sympathy or antipathy. Lord Durham adopted a policy which gave general satisfaction here, but aroused great hostility at home. Having induced some of the imprisoned ring-leaders to confess complicity in rebellion, the Governor-in-council pardoned minor offenders, but banished the principal ones to Bermuda under penalty of death should they return, the same punishment being threatened Papineau and others in the event of their setting foot again in Canada. This decision was proclaimed on the 28th of June, the day fixed for the Queen's coronation.

In the British House of Lords, the actions of the Governor excited indignation among his political enemies. Lord Lyndhurst declared that no such act of despotism had ever been hazarded in any country that respected legal forms. Lord Brougham and the Duke of Wellington also denounced the Indemnity ordinance, and the Ministry yielding to the criticism allowed a vote of censure upon Lord Durham to be carried. The Earl at once sent in his resignation and returned to England without even waiting for his recall.

These events aroused astonishment and indignation among British Canadians. Mr. Coffin writes from Quebec on September 23rd:

"What think you of the last intelligence from England? Can you conceive anything more ungenerous or discreditable to British legislation than the whole course of conduct adopted towards the Earl of Durham? and that such suicidal measures should emanate from the House of Lords! The long record of political blundering which constitutes the history of British North America presents no act more shameful to the parties principally concerned, more humiliating to England herself, or more ominous to these Colonies, than the nullification of these ordinances by a pusillanimous Ministry. Lord Durham goes home at once. He expressed that determination in his reply to the address of the Deputies from the Lower Provinces whom he has dismissed. The Malabar 74 is under orders to convey him and his family to England by the 6th of next month. It is almost incredible, yet not the less true, that the Earl of Durham received letters from Her Majesty and from Lords Melbourne and Glenelg, expressive of their satisfaction of these obnoxious ordinances and of his general administration of the Government, dated the very day on which the debate took place in which they were so factiously assailed and he so disgracefully abandoned. I will not trouble you here with the state of feeling in Quebec, but refer you to an article which will appear in the *Montreal Gazette* of Tuesday next, signed "an Englishman." I need not reiterate here what will, at all events, be easier to read in print than in hieroglyphics."

Sir John Colborne again became Administrator of the Government.

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From a letter of Mr. Coffin's we learn that soon after Lord Durham's arrival, Sir John Colborne decided to retire from Canada. He writes on June 23rd:

"Sir John Colborne has determined on demanding his recall. John George fancies himself General in every sense of the word, and I can easily understand that any interference on his part would be intolerable to Sir John. To say the truth as far as Sir John is concerned, I cannot regret his decision. He requires rest, and every such man ought to retire on his laurels before they fade. Health and happiness be with him wherever he goes!"

As Administrator and Commander of the Forces Sir John Colborne had his hands full. The very evening of the day Lord Durham sailed from Quebec, rebellion broke out afresh, the first act of hostility being the seizure by about 400 men of the steamer Henry Brougham at Beauharnois, on the St. Lawrence. Dr. Robert Nelson established himself at Napierville, issued a Declaration of Independence, and proclaimed himself Provisional President of the Republic of Lower Canada. He was in command of a large number of American mercenaries, and was soon joined by many Canadians, his force aggregating some 2000 persons.

But such prompt and effective measures were taken by Sir John and the loyal militia that within one week after its outbreak this second rebellion was suppressed.

Most unhappy were the consequences of this foolish rising. Courts-martial were organized, many prisoners were sentenced to transportation, while twelve were condemned to death and afterwards executed.

But worse than this was the misery caused by the avenging zeal of extreme loyalists who burned and plundered freely in the disaffected districts. Quoting from the Montreal Herald, Garneau tells us that "On Sunday night the whole country behind Laprairie presented a frightful spectacle, being one sheet of livid flames; and it is said that not one rebel's house has been left standing. God knows what is to become of the Canadians who have not perished, their wives and their families, during the coming winter, seeing that they have nought in prospect but the horrors of hunger and cold."

In a long and very interesting letter of July 9th written from St. Denis, Mr. Coffin gives us a very different and happier picture of the Eastern Townships, as lately seen by him when making an excursion on horse-back from St. Denis to Lennoxville, and thence to Port St. Francis. He says:

"I was anxious to judge for myself as to the actual state of the rural population of this District. I rode therefore, and having fifty occasions per diem to pull up and chat, or dismount and enter into the houses of the people as I passed along, I think

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I have been enabled to form a pretty accurate opinion as to the present state of feeling throughout the parishes I visited. I passed through those of Varennes, Vercheres, St. Denis, St. Charles, La Presentation, St. Hyacinthe and St. Pie, generally considered as the most disaffected in this disaffected district, and subsequently through the French country in the District of Three Rivers from Drummondville to Port St. Francis. I found universally the same olden civility and good nature, the same quiet and pastoral appearance which characterized this contradictory peasantry previous to the revolt. This visitation has left few traces of its progress, and those few are of a nature to disappear rapidly. Houses and barns are building and repairing, agriculture proceeds in the customary routine, pot herbs flourish with the usual exuberance in every little garden, and flowers adorn and humanize every cottage window. . . ."

How to manage these amiable *habitants* is a problem upon which Mr. Coffin has an opinion to offer:

"Now the only way to control a people so easily misled is to coerce the misleaders. . . . Substitute for these dangerous chatterboxes men who, understanding the language and the habits of these people, will go and reside among them, will identify themselves with them, will talk with them by their own firesides, administer summary justice for them at their doors, who may worthily represent a Government hitherto misrepresented or unknown, and explain the objects, the rules and the advantages of institutions whose benefits they thus practically diffuse. This is my view of the thing, and, I may add, in that of Sir John Colborne, is the intention and duty of the Stipendiary Magistracy just now introduced into this province. In discharging this duty they must naturally observe all that is going on in the country parts and will report accordingly, but their first labour is a labour of peace and reconciliation."

In another part he adds,

"The majority of these people is, I believe, loyal, but there is also a large and dangerous minority who desire a change and who are encouraged in their hopes and wishes by their proximity to the Frontier. The latter will cause trouble yet, if not well looked to. Not but that I am convinced that it is in the power of the Government to make itself so beneficially felt in this as well as in the French country and to win back the reasoning and reasonable portion of these recusants from their political heresies. Feeling convinced, as I conscientiously do, that our system of government is practically the best in the world, if properly administered and brought home to the governed, I am equally sure that if it fails in its effect it will be the fault of those who dispense it."

English as he was, Mr. Coffin could not but warmly admire the French as contrasted with his own fellow-countrymen.

"You cannot help remarking in this country the striking contrast which exists in the manners of the two races. Among the French all its politeness, hospitality, good will, deference. This is a stiff-necked, unbending and apparently most unamiable generation. Here, as in their fatherland before them

> That independence Britons prize too high
> Keeps man from man and breaks the social tie.

And, yet, in the main, when you know how to take them, they are good fellows enough."

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At the request of Sir John Colborne, Mr. Coffin gave up his position as Assistant Civil Secretary, and accepted that of Stipendiary Magistrate in what had been one of the most disquieted districts. His reception by the people was not a kindly one, and his success in restoring good feeling was not as great as in his generous enthusiasm he had expected it would be.

Writing from Sainte Marie de Monnoir, Sept. 23rd, he gives us the following account:

"I was on the point of being stationed at Belœil, in the centre of your rebellious *Censitaires*, when it was unfortunately discovered that Sainte Marie was a more disagreeable and a more turbulent place, and I was sent there forthwith, as I sometimes flatter myself, into honorable banishment like Lord Bloomfield to Stockholm. This extensive and populous seigniory is unquestionably most disaffected. To you who are acquainted with the habits and character of the Canadian peasantry, one trait alone will suffice. Not one man in twenty will salute me, or offer the slightest mark of recognition or respect. Most of them look very sulky, and many will not even look at all. Now this speaks volumes. Still I do not despair. I have only just begun. The country has been without law or justice or even the appearance thereof, except in very heinous cases, for years, and even in them justice was administered at such a distance, that practically the people have known nothing of its operation or of its effect. . . . I have made the Police and the Magistracy respected, I believe feared, hereabouts, but I doubt if my authority is popular. This is, however, a matter about which I care little just now. I hope that time will produce the natural good results of justice united with firmness and kindness wherever it can be beneficially exercised."

Lord Durham had remained in this country only five months, yet in that short time he had examined very thoroughly into the causes of discontent, and his report sent in on his return to England is one of the most valuable and statesmanlike documents ever presented on Colonial affairs. "In each and every Province," he wrote, "the representatives were in hostility to the policy of the Government, and the administration of public affairs was permanently in the hands of a Ministry not in harmony with the popular branch of the Legislature."

The principal recommendations made by Lord Durham were a Federation of all the Provinces, an intercolonial railway, and an Executive Council responsible to the Assembly. Failing a complete Federation, the immediate union of Upper and Lower Canada was strongly urged.

The report was vigorously condemned by the members of the Family Compact in Upper Canada, but for the most part was received with warm approval. Mr. Coffin's views are given in a letter dated April 17th, 1839:

"I do not suppose that you have plunged very deeply into this document of the abdicated Autocrat. My attention has, of course, been chiefly directed to his view of the affairs and present condition of the Lower Province, with which in the main I am much pleased. He has separated the real from the ostensible cause of quarrel and

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has developed fairly and very lucidly the national character of the controversy. His report on the Upper Province is generally denounced here as a distortion or misrepresentation of facts and therefore, of course, replete with false inferences; and there is a flippant superficiality in its style which contrasts strongly and very disadvantageously with the account of Lower Canada—the two productions are evidently from very different pens.

"From what we can learn, they have resolved at home upon a legislative regeneration of the Canadas of which "A Union" is to be the basis. I doubt the efficacy of the proposed panacea if the maintenance of the British connection is the real and honest object of the Ministers—if there is no republican *arrière pensée*—no paving of the declivity of revolution—of which I am sure there is a great deal. And even then, however dishonest and deceitful the policy, a statesmanlike view of the same end would rather have aimed at it through a Legislative Union of the whole British North American Provinces. Admitting the impossibility or inexpediency of maintaining the connection between us and the Mother Country, and that all parties acquiesced in the necessity of a separation, I should say (private feelings apart) that the true policy of England, her interest and her duty would be to unite her American Provinces, elevate them collectively to the rank of an independent people—create an antagonistic Republic on the North American Continent, and make the United Provinces redress the preponderance of the United States. Institutions of a republican character would bribe the disaffected and discontented, while the legislative form of general government aided by such additional restrictions as Great Britain, in conferring a constitution, might very easily impose, would ensure such strength to the executive and consequent security to property as can never be expected under the jealous limitations and circumscribed power of a Federative Constitution. Such a republic established in these colonies under the immediate protection of Great Britain, receiving from her all the benefits they at present derive and returning the same — relieving her from the expense of garrisoning and governing and yet acting as an outlet for her superabundant population and increasing manufactures, would, *the necessity of such separation once satisfactorily established*, possibly prove as good a scheme as any—certainly better, immeasureably better than a simple Union of Upper and Lower Canada."

In 1839 the British Government, having determined upon the advisability of uniting the two Canadas, sent out as Governor General the Right Hon. Charles Poulett Thompson (afterwards Baron Sydenham & Toronto), a noted merchant, who was in 1834 President of the Board of Trade. Owing to his connection with the Baltic timber business, he was at first regarded with suspicion in Canada, but shortly became very popular. Says Mr. Coffin, writing from his retreat at Sainte Marie (Sept. 23rd, 1839).

"That Poulett Thompson, the avowed enemy of the Canadian merchant, should be the man, would be incredible, if any extravagant or incomprehensible project in her Majesty's Ministers could be a just ground for incredulity. I would almost wager that if he does come out, Sir John Colborne will return to Canada. In the course of a few months confusion will be thrice confounded. Poulett Thompson will follow the herd of incapables that has preceeded him, and ministers on their marrow-bones will pray Sir John to return to save them—if he can."

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And again a few weeks later:

"I shall very probably part company from H. M. Ship Government, and return to my profession in the spring. She appears to be a crazy craft, very insufficiently manned, and as for the Skipper, the manner in which 'greatness' has been 'thrust upon him' only completes the 'midsummer madness' of the whole expedition."

Mr. Coffin, however, had reason shortly to change his opinion of Lord Sydenham. The new Governor proved to be a man of great ability, and Mr. Coffin acted under him in a number of important Commissions.

But at the time of Lord Sydenham's appointment, Mr. Coffin could not but think that the Home Government was slighting Sir John Colborne, for whom he had the highest and most affectionate regard. Writing to Mrs. Grant, he says:

"Sir John is really going, and for his sake I am sincerely glad of it. Considering the intricate game he has had to play, his political career in this Province has been most felicitous. His military is beyond praise. He returns universally respected and regretted, even by the Canadian population. He has worthily won his laurels; long may he live to enjoy them. I cannot help thinking that her Majesty's Government will award him on his return home with something more substantial and permanent than expressions of thanks.

"I suspect much that the restoration of Judges Panet and Bedard and the release of Viger from prison, are among the chief reasons for relieving Sir John. I've a notion that the uncompromising veteran will not yield his point, that Ministers know it or conjecture as much, and anticipate this obstacle to their wishes by providing at once a convenient successor."

And writing three days after Lord Sydenham assumed the Government, he says:

"In Sir John we have lost an exemplary man—a laborious and practical Governor, and a soldier experienced in the peculiar warfare of harassment and alarm, more than actual incursion, to which these Provinces have been and still are exposed. The existence of a man so singularly and peculiarly qualified to preside over the Government of these Provinces at this crisis, appears almost to have been a special interposition of Providence, while the blind and senseless manner in which it has been rejected and despised, argues equally the truth of the saying, 'that Providence stultifies those it intends to destroy.'"

Here follows an account of Mr. Coffin's parting with the chief he loved so well, an account I cannot forbear from quoting, even if it reveals some slight measure of personal vanity in the writer:

"I took leave of him about a week since. He was very kind and warm in his expressions of personal kindness and remembrance. My parting with him was attended by circumstances of peculiar gratification to me. They afforded me a glorious triumph over those cubs arround me, who envious of the confidence he openly reposed in me, had caballed so successfully as to induce me to resign my first appointment. When the time for his departure arrived, he found business throng upon him which these fellows were incompetent to perform. He sent for me and kept me in town a week,

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busily employed night and day, with him continually in his usual friendly and confidential manner, until I had got the work done for him which these gentry could not do. I could see that it was gall and wormwood to them, the hounds! while I, the while, was unimaginably silky and buttery, and as soft and soothing in all my doings as the boiled pease in the shoes of the knowing Pilgrim to Compostella. I cannot help thinking from Sir John's manner that he expected me to ask him for something, possibly to push my interests with the new *Gub*, but I was determined to show him that a loyal Englishman could serve him disinterestedly, and I could have done ten times more than I did do from sheer love for the gallant old man—God bless him—without hope of favor or reward."

Sir John Colborne did receive, on his return home, "something more substantial and permanent than expressions of thanks."

He was almost immediately created Baron, Lord Seaton, and shortly afterwards was further honoured by being appointed Governor of the Ionian Islands. During his tenure of this office, he carried through many important legislative reforms. In 1860, on his return to England, he became a Field Marshal of the Empire.

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THE PHOCAS OF TERRE NEUVE.

By Rev. Philip Tocque, A.M.

(Read 2nd April, 1892.)

Naturalists describe no less than 15 species of seals. The kind most plentiful and which pass along the coast of Newfoundland with the field ice, are the *Phoca greenlandica*, which is the technical or scientific name given to the harp or half-moon seal, which frequents the coast of Terre Neuve or Newfoundland. About the last of the month of February these seals whelp, and in the northern seas deposit millions of their young on the glassy surface of the frozen deep. At this period they are covered with a coat of white fur, slightly tinged with yellow. I have seen these "white coats" lying six and eight on a piece of ice, resembling so many lambs enjoying the solar rays. They grow very rapidly, and about three weeks after their birth begin to cast their white coat. They are now captured, being killed by a stroke across the head with a bat, gaff or boat-hook. At this time they are in prime condition, the fat being in greater quantity and containing purer oil than at a later period of their growth. It appears to be necessary to their existence that they should pass a considerable time in repose on the ice; and during this state of helplessness we see the goodness of Providence in providing these amphibious creatures with a thick coat of fur, and a superabundant supply of fat as a defense from the intense cold of the ice and the northern blasts. Sometimes, however, numbers of them are found frozen in the ice. When one year old these seals are called "bedlamers." The female is without the dark spots on the back, which form the harp or half moon, and the male does not show this mark until two years old. The voice of the seal resembles that of the dog, and when a vessel is in the midst of myraids of these creatures, their barking and howling sounds like that of so many dogs, literally driving away sleep during the night. The general appearance of the seal is not unlike that of a dog, whence some have called it the sea dog, sea wolf, etc. These seals seldom bring forth more than one, and never more than two, at a litter. They are said to live to a great age. Sometimes a stray one is caught in a net, reduced to a mere skeleton, with teeth all gone, which is attributed to old age. Buffon, the great French naturalist, says: "The time that intervenes between their birth and their full growth being many years, they, of course must live very long. I am of opinion that these animals live upwards of a

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century, for we know that cetaceous animals in general live longer than quadrupeds; and, as the seal fills up the chasm between the one and the other, it must participate of the nature of the former, and consequently live much longer than the latter." The Newfoundland seals probably visit the Irish coat. A number of seals were killed on the west coast of Ireland in 1856, among them the old harp, and Sir William Logan gives an account of the skeleton of this kind of seal having been found embedded in the clay around Montreal 40 feet deep.

The *Phoca cristata*, or hooded seals, are so called from a piece of loose skin on the head, which can be inflated at pleasure. When menaced or attacked the hood is drawn over the face and eyes as a defense. The female is not provided with a hood. An old dog-hood is a very formidable animal. The male and female are generally found together, and if the female happens to be killed first, the male becomes furious. Sometimes 10 or a dozen men have peen engaged upwards of an hour in despatching one of them. I have known a half a dozen hand-spikes to be broken in endeavoring to kill one of these dog-hoods. They frequently attack their assailants, and snap off the handles of the gaffs as if they were cabbage stalks. When they inflate their hoods it is very difficult to kill them. Shot does not penetrate the hood, and unless the animal can be hit somewhere about the side of the head it is almost a hopeless case to attempt to kill him. They are very large, some of their pelts which I have measured being from 14 to 18 feet in length. The young hoods are called "blue backs." Their fat is not so thick nor so pure as that of the harps, but their skins are of greater value. They slso breed further to the north than the harps and are generally found in great numbers on the outer edge of the ice. They are said not to be so plentiful and to cast their young a few weeks later than the harps.

The harbour seal *Phoca vitulina* frequents the harbors of Newfoundland summer and winter. Numbers are taken during the winter in seal nets.

The square flipper, which is perhaps the great seal of Greenland *Phoca barbata*, is now seldom seen.

The walrus *Trichecus rosmarus*, sometimes called the sea horse or sea cow is now seldom met with. Formerly this species of seal was frequently captured on the ice. This animal resembles the seal in its body and limbs, though different in the form of its head, which is armed with two tusks, sometimes 24 inches long, consisting of coarse ivory; in this respect much like an elephant. The under jaw is not provided with any cutting or canine teeth, and is compressed to afford room for the tusks, projecting downwards from the upper jaw. It is a very large

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animal, sometimes measuring 20 feet long, and weighing from 500 to 1,000 pounds. Its skin is said to be an inch thick, and covered with short yellowish brown hairs. What is called the seal is the skin with the fat or blubber attached, the carcase being left on the ice where it is killed. The flesh of the seal is frequently eaten, the heart and kidneys are like the pig's, and taste like them. The first thing that occurs in Newfoundland to break the winter's torpor is the bustle and activity attending the outfitting of the vessels for the seal fishery. In its prosecution are combined a spirit of commercial enterprise, a daring hardihood and intrepidity almost without parallel. The interest of every individual, from the richest to the poorest, is interwoven with it—from the bustling and enterprising merchant that, with spy-glass in hand, paces his wharf, sweeping ever and anon the distant horizon for the first view of his returning ship, to the little broom girl that creeps along the street, hawking her humble commodity. The return of the seal hunters reminds one of Southey's poems, "Madoc" and "Roderick the last of the Goths."

The seal fishery of Newfoundland has assumed a degree of importance far surpassing the most sanguine expectations of those who first embarked in the enterprise, and has now become one of the greatest sources of wealth to the country. In the commencement the seal fishery was prosecuted in large boats, which sailed about the middle of April and as its importance began to be developed, schooners of from 30 to 50 tons were employed, which sailed on the 17th of March. In 1845 the number of sailing vessels employed was 350, from 60 to 150 tons manned by 12,000 men. The time spent on the voyage was from two to six weeks. The sailing vessels have now been mostly superseded by steamers from 300 to 800 tons, carrying from 150 to 280 men each. In 1891, 19 steamers were engaged in the seal fishery. One steamer brought in 8,000 young harps the first trip and 18,000 old seals the second trip. The total value of both trips estimated at $132,000. Some of the steamers have brought in from 20,000 to 40,000 seals. A number of seals are taken in seal nets in winter and spring. A few years ago 150,000 seals were taken to the shore by persons who had walked on the ice in some of the northern bays of the island. Some years ago the ice was packed and jammed so tight in some of the bays for several weeks, that the seals on it could find no opening to go down, and numbers of them crawled upon an island, when some people happened to land upon the island and discovered them; 1,500 seals were slaughtered among the bushes. Seals have been known to crawl several miles over land. The number of seals taken yearly on the coast of Newfoundland is from 400,000 to 600,000, producing, commercially, no less a sum than $1,500,000. The seals are sold by weight. The young are sold at from

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$4 to $6 and the old ones at from $4 to $5 per cwt. The price, however, is regulated by the value of the oil in the British market. A young seal will weigh from 30 to 50 pounds, and an old seal from 80 to 200 pounds. It is calculated that the fat of 80 young harp seals will produce a ton of oil. The seal fishery is a constant scene of bloodshed and slaughter. Here you behold a heap of seals writhing and crimsoning the ice with their blood, rolling from side to side in dying agony. There you see another lot, while the last spark of life is not yet extinguished, being stripped of their skins and fat, their writhings and heavings making the unpractised hand shrink with horror to touch them. The seal fishery being prosecuted during the vernal equinox is rendered particularly dangerous. It is a voyage of hopes and fears, trials and disappointments, and the prosecution of it causes more anxiety, excitement and solicitude than any other business in the island. Sometimes the seals are sought after at a distance of from two to four miles from the vessel, over huge rugged masses of ice, and during this toilsome journey the men have to jump from one pan of ice to another, across horrid chasms where yawns the dark blue water ready to engulf them. Sometimes "slob," or ice ground up by the action of the waves and covered with snow, is mistaken for hard ice, and the poor sealers leaping upon it are at once buried in the ocean. Not unfrequently, when the sealers are at a distance from the vessel in search of their prey, a freezing snowdrift or a thick fog comes on, when no object around can be descried, and the distant ship is lost. The bewildered sealers gather together. They try one course, then another, but in vain, no vessel appears. The lights shown from the vessel cannot be seen, the guns fired and horns blown cannot be heard. Night comes on, and the wretched sealers perish through fatigue, cold, and hunger on the glittering surface of the frozen deep. Scarcely a fishing season passes but the widow's wail and the orphan's cry tell of the dreary, the dreadful death of the seal hunters. Sometimes vessels are crushed between two large masses of ice called "rollers," when all on board are consigned to one common destruction. The islands of ice or icebergs, are dreadful engines of destruction. Many of these iron-bound ships come in contact with them, and sometimes vessel and crew perish together.

The Newfoundland seal is different from the Behring sea seal. The Newfoundland seal is what is called the hair or bearded seal. They are sought after for the value of their fat instead of their fur. The Newfoundland sealskins are worth not more than 50 or 60 cents apiece, whereas the fur seal, when dressed, is worth $60 a piece, in first hands. All the Newfoundland seals are whelped on the ice and not on the land as the fur seal.

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CIRCULAR-LETTER ADDRESSED TO ASTRONOMERS OF ALL NATIONS.

PROPOSED CHANGE IN RECKONING THE ASTRONOMICAL DAY.

TORONTO, CANADA, 21st April, 1893.

The Canadian Institute in co-operation with The Astronomical and Physical Society of Toronto, have had under consideration the subject of Astronomical Time Reckoning, and have, after much deliberation and consultation, appointed a Joint Committee to suggest the best means of ascertaining the views of astronomers throughout the world.

The Joint Committee have presented the accompanying Report, in which both Societies concur.

On behalf of the two Societies we have the honour to direct attention to the observations and recommendations of the Joint Committee, as well as to the appended extracts, expressing the views of the following gentlemen :—

1. Sir John Herschell.
2. M. Otto Struvè, Imperial Astronomer, Pulkowa.
3. Mr. W. H M. Christie, Astronomer Royal, Greenwich.
4. Prof. S. Newcomb, Nautical Almanac Office, Washington.
5. Commodore Franklin, United States Naval Obs., Washington.
6. Mr. C. Carpmael, President Astronomical Society, Toronto.
7. Mr. Arthur Harvey, President Canadian Institute, Toronto.

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In order to obtain the views of as many astronomers as possible the Joint Committee recommend that answers be invited to the following question :—

Is it desirable, all interests considered, that on and after the first day of January, 1901, the Astronomical Day should everywhere begin at Mean Midnight?

It is requested that early answers to this question be sent to the following address :—

JOINT COMMITTEE ASTRONOMICAL TIME,

CANADIAN INSTITUTE,

TORONTO, CANADA.

As it is intended to send copies of further papers on this subject to those replying, it is desirable that the full name, official designation, if any (professional or non-professional) and proper address be furnished with each reply.

ALAN MACDOUGALL,

G. E. LUMSDEN,

Joint Secretaries.

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REPORT OF THE JOINT COMMITTEE

Of The Canadian Institute and The Astronomical and Physical Society of Toronto.

SANDFORD FLEMING, C.E., C.M.G., LL.D., Etc., *Chairman.*

Canadian Institute.	*Astronomical Society.*
ARTHUR HARVEY, President.	CHARLES CARPMAEL, M.A., F.R.A.S., Etc., President.
GEO. KENNEDY, M.A., LL.D.	JOHN A. PATERSON, M.A.
ALAN MACDOUGALL, C.E., Secretary.	G. E. LUMSDEN, Corresponding Secretary.

TORONTO April 20th, 1863.

Your Committee on the subject of Astronomical Time Reckoning, beg leave to report as follows:—

(*a*) That the Sixth Resolution of The Washington International Conference of 1884, which was carried unanimously by the representatives of the twenty-five nations there assembled, counting among them several astronomers of world-wide fame, reads as follows:—"The Conference expresses the hope that, as soon as may be practicable, the Astronomical and Nautical Days will be arranged everywhere to begin at Mean Midnight;"

(*b*) If any action is to be taken on this Resolution, the most appropriate date for the new reckoning to take effect would be the first day of the new century;

(*c*) As the Ephemerides are usually prepared four or five years in advance, it is obvious that if it be decided to make Astronomical Time accord with Civil Time at the date named, a common understanding should not be delayed beyond the year 1895 or 1896;

(*d*) To arrive at an agreement, it is considered essential to ascertain the views of those concerned;

(*e*) The Canadian Institute and The Astronomical Society should, in the general interest, assume the duty of inviting opinions upon the subject, to be collated, tabulated and published in a special report;

(*f*) If the weight of opinion expressed by those who respond to such invitation, be in favour of a change, further steps may be taken with the view of reaching an international understanding;

(*g*) Your Committee suggest that the opinions which have already been expressed by some leading astronomers be published. To this end,

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extracts from the writings of Herschell, Struvè, Christie, Newcomb and Franklin, are hereto appended; also, remarks recently made by the President of the Astronomical and Physical Society of Toronto, and the President of the Canadian Institute;

(*h*) Your Committee recommend that replies be asked to the following question, and that it be widely circulated:—

QUESTION.

Is it desirable, all interests considered, that on and after the first day of January, 1901, the Astronomical Day should everywhere begin at Mean Midnight?

(*i*) Your Committee further suggest that astronomers generally throughout the world be invited to send definite replies to the question as soon as convenient. Replies to be addressed, "*Joint Committee, Astronomical Time, Canadian Institute, Toronto, Canada.*"

Respectfully submitted,

SANDFORD FLEMING,
Chairman.

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APPENDIX.

Extracts from the Opinions of Astronomers and Others Referred to by the Joint Committee.

I. (935) Astronomical time reckons from noon of the current day; Civil, from the preceding midnight, so that the two dates co-incide only during the earlier half of the Astronomical and the later half of the Civil Day. This is an inconvenience which might be remedied by shifting the astronomical epoch to co-incidence with the civil. (147) . . . This usage has its advantages and disadvantages, but the latter seem to preponderate; and it would be well if, in consequence, it could be broken through and the Civil reckoning substituted. Uniformity in nomenclature and modes of reckoning in all matters relating to time, space, weight, measures, etc., is of such vast and paramount importance in every relation of life as to outweigh every consideration of technical convenience or custom. The only disadvantage to astronomers of using the Civil reckoning is this—that their observations being chiefly carried on during the night, the day of their date will, in this reckoning, always have to be changed at midnight, and the former and latter portions of every night's observations will belong to two differently numbered civil days of the month. There is no denying this to be an inconvenience. Habit, however, would alleviate it; and some inconveniences must be cheerfully submitted to by all who resolve to act on general principles. All other classes of men, whose occupations extend to the night as well as day, submit to it, and find their advantage in so doing.—*Sir John Herschell's Treatise on Astronomy.—Third Edition.*

II. Much earnest reflection, on the other hand, must be given to the desire expressed at the meeting, that Astronomical Time Reckoning should be brought in accord with the commencement of the day in civil life. In this matter, astronomers have not simply to abandon a custom of long standing, and consequently to make conditional changes of practice established for many years, but, at the same time, astronomical chronology is disturbed, which is easily understood, must exercise a marked effect on the comprehension of all problems bearing upon matter. Without doubt, the astronomer must make a great sacrifice for the fulfilment of this desire; but, in reality, this sacrifice is not greater than that entailed on our forefathers when they passed from the Julian to the Gregorian Notation of Time, or when they altered the commencement of the year: a sacrifice of convenience by which we yet suffer when it becomes necessary to refer to phenomena of remote dates. At this period, we must the less stand in fear of a like sacrifice, when by such means an acknowledged existing non-accord between science and ordinary life can be set aside: a non-accord which, it is true in individual cases, does not press heavily on the astronomer, but which is a constant source of inconvenience for non-professional astronomers who are desirous of making use of astronomical information. And in such respect, this sacrifice ceases so to be considered and is transformed into an act of public utility with regard to all astro-

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nomical details which stand in clear relationship with the outer world in which almost daily conflicts come to the surface between the different designations of dates. Conflicts among others which are even injurious to astronomical labours in such observatories where observations are continually adjusted to the day. . . . While the Directors of the Pulkowa Observatory make their full acknowledgment to the Astronomer Royal for this precedent, which has been established, so are they ready to follow the example, and this fact leads us the more to expect that also this course will be adopted by the Washington Naval Observatory, as in the American Marine the Date Notation from midnight has been already accepted. It is only in the matter of the period when the Date Notation, according to Universal Time, should be introduced into the publications of the observatories, that we feel inclined to recommend that there should be delay until, in this respect, the most perfect possible understanding be attained by all astronomers, in order to avoid the much more critical disturbance in astronomical chronology which would arise if the transition to the new Date Notation was not equally followed on all sides. We are desirous, accordingly, of suggesting a suitable time-point for the commencement of the year for which the Nautical Almanac would inaugurate the changes corresponding to the requirements named. The latter, as has before been said, could come to pass in the year 1890. We would, however, ourselves prefer the change to take place, in the first instance, with the change of the century. Until that date it would probably be the simultaneous proceeding of all astronomers, with general consent, to look forward to this period of transition, and it would more easily stamp itself on the memory of all who hereafter would be busied in investigations in which exact chronology plays a part.—*Paper on the Washington Conference by Otto Struve, Director of the Imperial Astronomical Observatory, Pulkowa, Russia.*

III. The reasons for making the change, as affecting astronomers, are:—(1) The introduction of the Universal Day commencing at Greenwich Midnight, and reckoning from 0 to 24 hours makes it inexpedient to have another time reckoning of 0 to 24 hours starting from Greenwich Noon. There are already frequent mistakes of date arising from confusion between civil and astronomical reckoning, several practical observers using the former, which is also commonly employed in almanacs and occasionally in some astronomical periodicals. The use of *three* different systems of reckoning solar time would greatly increase the confusion. (2) The circumstances under which astronomical observations are made have completely changed in modern times since the application of powerful telescopes to meridian instruments and the development of Solar Physics. The change of date at noon in the middle of the day's work has thus, in many cases, become very inconvenient. (3) As regards meridian observations, the experience of the past year at Greenwich Observatory (where observations are carried on as continuously through the 24 hours as at any other observatory) shows that the whole of the astronomical day can be introduced very easily and with decided advantage on the whole. (4) In the case of extra-meridian observations, the observer usually finds it convenient to work in the earlier hours of the night, so that little or no inconvenience would result from a change of date at midnight. Discoverers of comets and observers of meteors, who observe in the early morning, often use civil reckoning, and mistakes of date have, on several occasions within my own

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knowledge, resulted from the existence of two different modes of counting time. (5) For spectroscopic and photographic observations of the sun, it is now recognized that the day should be reckoned from midnight, and the same reckoning would naturally be used by the observer when he takes spectroscopic and photographic observations at night, and also in determinations of the places of comets, stars, etc., which he may make in connection with his spectroscopic observations. It seems absurd to expect the same observer to change his system of reckoning mean solar time according to the class of observations he is making at the moment. (6) The proposal to include in the routine work of an observatory, photography of the stars, as well as of the sun, will further increase the difficulty of maintaining a distinction as regards time-reckoning between the various classes of astronomical observations. (7) At many observatories, magnetical and meteorological observations are carried on concurrently with astronomical observations, and it is admitted that for the two former classes the day commencing at midnight should be used. (8) For the distribution of the time to the public, a work which is undertaken by many observatories, the civil day would be used. (9) Thus civil reckoning commencing at midnight must be used for solar, magnetical, and meteorological observations, and also for the distribution of time to the public, so that the retention of astronomical reckoning would involve the use of two different systems of mean solar clocks, differing by 12 hours, in the same observatory—a circumstance likely to lead to intolerable confusion. (10.) As regards the supposed discontinuity which would arise from the change in the Nautical Almanac, the difference of time-reckoning is precisely similar to that which would have to be taken into account in the comparison of Greenwich observations with those made at any other observatory. The astronomical calculator is in the habit under the present system of allowing for the difference in time-reckoning between different observatories, and his task would be greatly simplified if he had only to deal with universal time.—*Report to the Trustees of Greenwich Observatory, by W. H. M. Christie, M.A., LL.D., Astronomer Royal of England.*

IV. The first of these recommendations proposes a change in the method of counting astronomical time which has come down to us from antiquity, and which is now universal among astronomers. The practice of taking noon as the moment from which the hours were to be counted originated with Ptolemy. This practice is not, as some distinguished members of the Conference seem to have supposed, based solely upon the inconvenience to the astronomer of changing his day at midnight, but was adopted because it was the most natural method of measuring solar time. At any one place solar time is measured by the motion of the sun, and is expressed by the sun's hour angle. By uniform custom, hour angles are reckoned from the meridian of the place, and thus by a natural process the solar day is counted from the moment at which the sun passes over the meridian of the place or over the standard meridian. . . . A change in the system of reckoning astronomical time is not merely a change of habit, such as a new method of counting time in civil life would be, but a change in the whole literature and teaching of the subject. The existing system permeates all the volumes of ephemerides and observations which fill the library of the astronomer. All his text-books, all his teachings, his tables, his formulæ, and his habits of calculation are based on this system. To change the system will involve a change in many of the

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precepts and methods laid down in his text books. . . . But this would only be the beginning of the confusion. Astronomical observations and ephemerides are made and printed not only for the present time, but for future generations and for future centuries. If the system is changed as proposed the astronomers of future generations who refer to these publications must bear the change in mind in order not to misinterpret the data before them. The case will be yet worse if the change is not made by all the ephemerides and astronomers at the same time epoch. It will then be necessary for the astronomers of the twentieth century, using ephemerides and observations of the present, to know, remember, and have constantly in mind a certain date different in each case at which the change was made. For example, if, as is officially announced, the Naval Observatory introduces the new system on January 1, 1885, then there will be for several years a lack of correspondence between the system of that establishment and the system of the American Ephemeris, which is prepared four years in advance. . . . I see no advantage in the change to compensate for this confusion. If astronomical ephemerides were in common use by those who are neither navigators nor astronomers the case would be different. But, as a matter of fact, no one uses these publications except those who are familiar with the method of reckoning time, and the change from astronomical to civil time is so simple as to cause no trouble whatever. The change will affect the navigator as well as the astronomer. Whether the navigator should commence his day at noon or midnight, it is certain that he must determine his latitude from the sun at noon. The present system of counting the day from noon enables him to do this in a simple manner, since he changes his own noon into the astronomical period by the simple addition or subtraction of his longitude. To introduce any change whatever into the habits of calculation of uneducated men is a slow and difficult process, and is the more difficult when a complex system is to be substituted for a simple one. I am decidedly of the opinion that any attempt to change the form of printing astronomical ephemerides for the use of our navigators would meet with objections so strong that they could not be practically overcome. . . . I respectfully submit that in view of these considerations no change should be made in the change of reckoning time employed in the publications of this office until, by some international arrangement, a common date shall be fixed by all nations for the change.—*Argument against changing the Astronomical Day, by Prof. S. Newcomb, LL.D., Etc., Superintendent of the Nautical Almanac Office, Washington, Dec. 6, 1884.*

V. Referring to the letter of Professor Newcomb, concerning the resolution of the late International Meridian Conference on the subject of the change of the astronomical date, so as to make the midnight of Greenwich 0 hours, instead of noon as at present, I have the honor to submit the following considerations. . . . The order referred to was not issued without a knowledge on my part of the views of such a distinguished astronomer as Professor Adams, of England, as well as of those of other members of the Conference. A reference to the proceedings of the Conference shows that its recommendation on this point was unanimous. It has been publicly announced in *Nature* that the Astronomer Royal of England proposes to make the change on the same date as that directed by me; this has been confirmed by a telegram received from him by me. So far as the counting of astronomical time from antiquity is concerned, it is the argument of conservatism which desires no change in an existing

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order of affairs; yet, assenting to this argument, we might refer to a still remoter antiquity—to the time, not of Ptolemy, but of Hipparchus, the "Founder of Astronomy," who reckoned the twenty-four hours from midnight to midnight, just as the Conference has proposed. While it is unquestionably true that some confusion may occur, yet the liability to it will be almost entirely with the astronomer, who, through his superior education and training, could easily avoid it by careful attention to the ephemerides he was using. During the years of change, before the ephemerides are constructed in accordance with the new method, it will only be necessary to place at the head of each page of recorded observations the note that the time is reckoned from midnight, to call attention to the fact, and thus obviate the danger of error. It is an undeniable fact that the educated navigator finds the conversion of time a simple matter, yet experience has demonstrated that to the mariner who is not possessed of a mathematical education there is a decided liability to the confusion which is so greatly deprecated by all who are interested in this subject. I believe that to all navigators, at least to all English-speaking ones, the new method will prove itself decidedly advantageous. As is well-known, for many years navigators kept sea time, by which the day was considered to begin at noon, preceding the civil day by twelve and the astronomical day by twenty-four hours. The change to civil time now kept on board ship was effected readily and without friction, so that the recommendation of the Conference regarding the commencement of the nautical day has already been largely anticipated. The navigator is concerned not with his longitude but with his Greenwich time, having obtained which he can take from the Nautical Almanac the data he seeks, whether given for noon or midnight, and when the ephemerides shall have been made to conform to the new system there will be one time in common use by all the world. It seems to me eminently proper that the nation which called the Conference should be among the first to adopt its recommendations, and while it might possibly be better to wait until an entire agreement has been entered into by the astronomers of all nations, yet the fact that the first and most conservative observatory in the world has acceded to this proposal of the Conference would seem to be a sufficient reason why we should not wait for further developments. In deference, however, to the views so well advanced by Professor Newcomb, and in view of the fact that the President has recently transmitted the proceedings of the Conference to Congress, as well also of the desirability of securing uniformity among the astronomers of our own country at least, I have suspended the execution of the order for the present.—*Remarks by Commodore S. R. Franklin, Superintendent United States Naval Observatory, Washington, Dec. 11th, 1884.*

VI. The subject of reform in time-reckoning was brought before the Canadian Institute many years ago by Mr. Sandford Fleming. The reforms suggested were much needed, and were so ably advocated by Mr. Fleming that already several of them have been adopted not only on this continent, but in various countries all over the world. One important suggestion, however, although recommended by the Washington Conference, has not yet been acted upon, viz., the making of the astronomical and nautical day to accord with the civil day. It has been suggested that a body like this Society may render valuable assistance in this matter by collecting the opinions of astronomers on the subject. The Canadian Institute having been the first society to

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bring the whole subject prominently and successfully before the world, it would be well for us to ask their co-operation with us in this matter. As an illustration of some of the inconveniences which result from the present want of accord between the astronomical and nautical day and the civil day, I may refer to a case within my own experience. In 1873 a sudden and very violent storm caused great destruction along the south-eastern coast of Nova Scotia. I had occasion to investigate that storm, and, for the purpose, obtained the logs of vessels which were caught in it. I was assisted in this by the late Sir Henry Lefroy, then Governor of the Bermudas, who procured the logs, or copies of the logs, of the ships which put into the islands for repairs. The satisfactory examination of these logs was attended by great difficulty owing to a want of uniformity among the sea captains in making entries. For instance, many of the captains wrote up their logs at noon for the twenty-four hours. Some of them were accustomed to enter up the events occurring between, say, noon of the 20th of the month and noon of the 21st, under the date of the 20th; that is, the astronomical and nautical day during which they happened, while others entered the same events under date of the 21st, or that upon which the entries were made, so that, in the absence of specific information, it was impossible to tell to which set of twenty-four hours any given event should be referred. Had the captains been in the habit of changing their dates at midnight, no such inconvenience would probably have resulted. For my part I am decidedly in favour of bringing Astronomical Time into harmony with civil reckoning at the change of the century. After considering all that can be said against any alteration in the present dual system, I am satisfied that any inconvenience which would result to individuals from the change would be limited in duration and would not be felt by a large number of persons. If it be determined once for all to abandon the double notation of dates at the beginning of the new century, ample time would be allowed for any necessary preparation for the change, and when the period of transition arrived any inconvenience which might temporarily be felt could not be compared with the advantages which would follow in all future years from uniformity of reckoning.—*Remarks to the Astronomical and Physical Society of Toronto, by Charles Carpmael, Esq., Superintendent of the Meteorological Service of Canada, February 11th, 1893.*

VII. The Canadian Institute, which took the initiative in bringing before the Scientific world, in 1879, the principle of Universal Time Reckoning, heartily co-operates with its sister society in the endeavor to bring the Astronomical day within the sphere of uniformity it has continuously advocated. The Council of the Institute approves of the terms of the Circular Letter prepared by the Joint Committee under the Chairmanship of Mr. Sandford Fleming, long identified with this subject, and an honourary member of both societies. It is not easy for me to conceive any reason for beginning the day at noon, other than the convenience of having all the hours of darkness brought within one astronomical day. Stellar observations for the purpose of practical astronomy no longer requiring darkness, this reason no longer exists, and I trust we are now warranted in expecting the abolition of a double notation of date as the result of our efforts.—*Arthur Harvey, Esq., President of the Canadian Institute, Toronto, April, 1893.*

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In answer to numerous enquiries concerning the Publications of the Canadian Institute. and applications for missing numbers, the attention of members and Correspondents is requested to the following :—

1. The FIRST SERIES began August, 1852 ; concluded December, 1855 ; contains 41 numbers in 3 vols. 4to. It has for title, "The Canadian Journal ; a Repertory of Industry, Science and Art ; and a Record of the Proceedings of the Canadian Institute." Vols. II. and III. of this series can still be supplied. Vol. I. is out of print.

2. The SECOND SERIES began January, 1856 ; concluded January, 1878 ; contains 92 numbers in 15 vols. 8vo. It has for title, "The Canadian Journal of Science, Literature, and History." This series can still be supplied, except Part 5 of Vol. XV., which is quite out of print. Of Vols. X., XI., XV. but few copies remain.

By inadvertence, No. 85 (November, 1873), Vol. XIV. of this series immediately follows No. 79. There is, however, no *lacuna* between these two numbers, as is shown by the fact that the paging is consecutive.

3. The THIRD SERIES, commenced in 1879, concluded April, 1890, contains 20 numbers in 7 vols. Its title is "Proceedings of the Canadian Institute." Parts 1 and 2 of this series are entitled "The Canadian Journal ; Proceedings of the Canadian Institute."

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Of Vol. I., Parts I and 3, and of Vol. II., Part 1, are out of print. Of Vol. II., Part 2, very ew copies remain. Of Vol. III., Part 1 and of Vol. IV., Part 2 are out of print.

4. The FOURTH SERIES commenced October, 1890. Its title is "Transactions of the Canadian Institute." Vols. I. and II., each containing 2 Parts, have been published.

5. Only five Annual Archaeological Reports of the Institute have been published in a separate form, viz., for 1886-87, 1887-88, 1888-89, 1889-90, and 1890-91. There has been no Archaeological Report between the Third Report (Session 1888-9) and the Fourth Report (Session 1890-91). The latter should have been printed (Session 1889-90).

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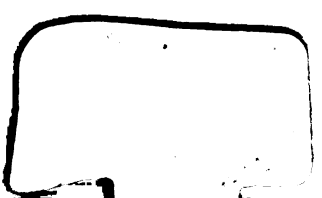

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